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THE
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STOCKHOLDERS' VOTING RIGHTS AND THE
CENTRALIZATION OF VOTING CONTROL

SUMMARY

Restricted voting control comparatively recent, 353. — I. Non-voting industrial stocks. Preferred issues, 357. — Common stock, 360. — II. Contingent voting industrial stocks; their importance and characteristics, 362. — Non-voting contingent voting issues, 364. — Non-voting with exceptions — contingent voting, 364. Non-voting for directors — contingent voting, 366. — Full voting — contingent voting, 367. — III. Conditions which render operative the contingent voting rights. Dividend defaults, 367. — Other contingencies, 372. — IV. Extent of contingent voting control when operative. Exclusive voting, 374. — Extra voting, 375. — Full voting, 376. — Exclusive voting for directors, 377. — Contingent voting common shares, 378. — V. Railroad and public utility non-voting and contingent voting stocks; Utilities, 378; Railroads, 381. — VI. Arguments for and against non-voting stocks, 382. — Advisable to prohibit strictly non-voting issues, 385. — Ineffectiveness of full voting rights to prevent centralized voting control, 386. — VII. Conclusion. Advantages of strong contingent voting issues, 388.

PRIOR to the beginning of the present century there existed but little restriction of the voting rights of shareholders. Railroad preferred and common stocks appear to have been commonly full voting issues¹ and this has continued to be true of these securities down to the present day.

1. Beaver Meadow Railroad and Coal Co., 1850; Erie, 1895; M. St. P. & S. Ste. M., 1888; St. L. Southwestern, 1891; L. E. and W., 1887; C. C. C. & St. L., 1889; C. St. P. M. & O., 1880; Col. & Southern, 1898; Chicago & Northwestern, 1864; C. I. & L., 1897; Central Pacific, 1899.

Data on the voting rights of shareholders in the early industrial corporations are not easily obtainable. But it is perhaps of some significance that several important corporations, chartered in the years just prior to 1895, issued full voting preferred and common shares.² Even the great development of industrial combinations from 1898 to 1903 did not apparently result in any important limitation of stockholders' voting rights. Most of the preferred and common stocks issued during this period appear to have been full voting,³ tho the consent of two thirds or three fourths of the otherwise full or equal voting preferred stock was sometimes required on the creation of mortgages.⁴ It is well known that during this period companies were combined upon the basis of the issuance of preferred stock, or preferred stock and bonds, to at least the approximate value of the properties consolidated, the common stock issues being largely water (looking at capitalization from a property valuation standpoint). Most of this preferred stock was obtained by the owners of the various companies combined in exchange for their properties, often with a bonus in common. Much of the common was distributed in the form of these bonuses, and for promoters' services, organization expenses, and the like, while the balance was sold to the public. It is logical to infer that the preferred shareholders who had placed their plants

2. American Cotton Oil, 1889; American Sugar Refining, 1891; American Typefounders and U. S. Rubber, 1892; Associated Merchants, International Mercantile Marine, and Agawa Co. (afterward the American Agricultural Chemical Co.), 1893. Sometimes the preferred has special voting powers on the making of mortgages, etc.

3. National Candy, American Woolen, U. S. Cast Iron Pipe and Foundry, American Brake Shoe, American Car and Foundry, American Chicle, International Paper, Rubber Goods Manufacturing, Federal Steel, American Tin Plate, American Steel and Wire, U. S. Steel, National Biscuit, American Writing Paper, United Shoe Machinery, National Enameling and Stamping.

4. General Chemical, American Can, Allis-Chalmers, American Locomotive, Railway Steel Spring.

in the consolidation insisted upon voting rights. Where bonus common was also issued to them, they doubtless would have objected to any limitation of their common-stock voting rights, as would likewise the promoters and others who obtained or purchased common shares. Hence the prevalence during this period of full or equal voting common and preferred stocks.

It may be noted, however, that in certain cases these combinations did restrict the voting rights of shareholders. The International Silver Company, when organized in 1898, authorized nine million preferred and eleven million common. The common shares were made non-voting until January, 1902, after which date their holders became entitled to vote, but to cast only one vote for each two shares held. This stock may perhaps be regarded as one of the earliest issues of non-voting common. The Federal Mining and Smelting Company, another corporation chartered in the combination period, issued preferred shares which were substantially non voting.⁵ This company was apparently organized as a subsidiary of the American Smelting and Refining Company.⁶ Both the American Caramel and Royal Baking Powder companies also restricted the voting rights of their preferred shareholders as subsequently explained below.

Since the close of the period of industrial consolidation, and more particularly during the last fifteen years, corporation stock issues have shown an increasing tendency to restrict the voting rights of certain classes of shareholders, and a corresponding trend toward centralized or concentrated voting control. No

5. See below, under Industrial Non-Voting Stocks, p. 358.

6. Moody's, 1904, states that the American Smelting and Refining Company is interested in the Federal Mining and Smelting Company, which was formed in 1903 and which is now acquiring other mining properties.

doubt the movement has been greatly accelerated by the development of preferred issues possessing certain similarities to debenture bonds, as well as by the excess profits tax which stimulated preferred stock issues as substitutes for bonds and notes in financing.⁷ But the tendency to restrict the voting powers of shareholders has recently developed to a point where one may well wonder how far this movement is likely to be carried.⁸

Broadly speaking, direct⁹ restriction in the voting control of corporations has taken place chiefly through the employment of two principal types of shares: (1) non-voting stocks, and (2) contingent or conditional voting issues. It is the purpose of this paper to discuss, first, the major characteristics of these issues, and second, to consider the extent to which these limitations in voting control are proper and legitimate.

In the preparation of this study the writer has examined the preferred and common issues of approximately 350 corporations, of which 74 were public utilities, or public utility holding or securities companies; 42 were railroads, and the balance industrials.

The sources are chiefly charters and by-laws of the corporations, or extracts from them, furnished by the corporations. In some cases New York Stock Exchange listing applications were relied upon; and stock certificates furnished by the companies were also used, where the corporations were unable to supply copies of charters or by-laws. In a few other instances the

7. Under the excess profits tax, the proceeds of bond issues could not be treated as invested capital in computing taxes, whereas funds raised by the issue of stock were added to the investment upon which the rate of return was computed.

8. Cf. William Z. Ripley, *Proceedings of the Academy of Political Science*, January, 1926, and *Atlantic Monthly*, January, 1926.

9. That is, restriction in the specific voting rights given to shareholders by charter, by-law, or other provision; as distinct from restrictions imposed through the use of voting trusts or similar devices. This article is not concerned with the latter.

writer was obliged to accept a written statement of the company as to the rights in question. For perhaps ten or a dozen corporations the data employed were taken from financial manuals. As the foregoing were the only sources employed, it has been deemed unnecessary, where so large a number of issues are referred to by name, to indicate from which of them the data were procured. It should also be understood that, as the documents in question were collected over a period of time, some of the issues considered have been replaced by other securities. The stocks described therefore represent issues which have been made by the corporations named, tho not always now outstanding.

A survey of this character is not rendered easier by the fact that in a number of cases no stockholders' voting rights are specifically set out either in charter, by-laws, or other corporation documents. In such cases it has been necessary to infer that the general rule of law applies; that is, the right to vote is one of the inherent rights of a shareholder, and he therefore possesses full voting power share for share with every other share, in the absence of specific contract limiting or abridging this right.

Both the non-voting and contingent voting types of issues are apparently most prevalent among industrial corporations, while the contingent voting issues exhibit a much greater variety of characteristics in the case of this class of corporation than are shown by railroads or public utilities. In consequence we shall begin with the industrial stocks.

I. NON-VOTING INDUSTRIAL STOCKS

Preferred. — The true non-voting stock is necessarily one in which the contract of the corporation with the stockholders absolutely deprives some class of share-

holders of all voting powers. For example, in the case of the Standard Oil Company of Ohio it is provided that "the holders of preferred stock shall have no voting powers whatsoever, nor shall they be entitled to notice of any meeting of the stockholders." While this type of issue is doubtless on the increase, completely non-voting stocks seem still to constitute a small proportion of the total number of issues. Thus the writer's examination of the preferred and common issues of over 225 industrial corporations, either made or outstanding during recent years, revealed only 16 issues of completely non-voting preferred,¹ and a lesser number of non-voting common stocks.

Limited Voting Preferreds. — Besides these strictly non-voting issues, however, there are also a few preferreds that approach very closely to this category, because of the exceedingly limited voting control which they exercise. As a rule these limited voting rights relate to changes or alterations in the financial structure or otherwise, which might affect adversely the rights of the preferred shareholder. For example, Briar Hill Steel preferred shareholders were not entitled to vote except on the question of a subsequent issue of preferred stock, and those of the Hydraulic Steel Company only on the creation of mortgages, etc.² The incorporation certificate of the Federal Mining and Smelting Company provides that the preferred shares shall have no voting powers except on the increase, or authorizing the increase, of the outstanding preferred stock, or on the amendment of provisions of the articles

1. McAndrews and Forbes, Shawmut Mills, the Standard Oils of New Jersey and Ohio, Stewart Manufacturing, Winchester Company (2d), Atlantic Refining, Eastern Leather, American Thread, Duplan Silk, Union Tank Car, Merrimack Manufacturing, Youngstown Sheet and Tube, Bethlehem Steel (8 per cent), Timken-Detroit Axle (7 per cent preferred), International Milling.

2. See next footnote.

of incorporation or by-laws with reference to either of these matters.

Issues of this type are sometimes mistaken for strictly non-voting stocks, owing to the fact that the charter, by-laws, or other instrument may contain an unqualified statement at one point that the preferred stock has no voting power, while in some other part of the documents setting out the rights of shareholders will be found a statement of specific voting rights or consents which these shareholders are entitled to exercise.³

The obstacle not infrequently encountered by corporations desiring to issue non-voting shares is the law of the states of their incorporation, which may require the vote (or equivalent consent) of the preferred shareholders, or of a majority or more of all shareholders, or similar authorizations, to validate certain corporate acts. Unless the corporation is to reincorporate elsewhere, it may in consequence be precluded from issuing a strictly non-voting class of stock. This situation is recognized in the language employed by certain apparently non-voting issues. A preferred issue made by the Chesebrough Manufacturing Company provides that this stock shall have "no voting power . . . except in those cases where it is specifically provided by statute that corporate action shall not be taken without the affirmative vote of a certain percentage or proportion of the stockholders, or as otherwise provided by law."⁴ Hence, even issues which can be classed as

3. For example the stock certificates of the Hydraulic Steel Co. state in one paragraph: "The holders of the preferred stock shall have no voting power"; in a subsequent paragraph is a covenant to the effect that the company will not create any mortgage, fixed charge, or lien, having priority over the preferred stock, except with the affirmative vote or written consent of the holders of 75 per cent of the preferred stock then outstanding.

4. An amendment to the Certificate of Organization of the American Cigar Co., made in 1920, similarly provided that "the Preferred stock shall not confer on the holders the right to attend or vote . . .

non-voting according to charter or by-law statements, may in reality be subject to legal requirements which render them voting upon occasion.

Common. — The survey made by the writer has, as in the case of the preferred stocks, disclosed only a comparatively few industrial common shares which are strictly non-voting. In only one case, that of the International Silver Company above, has the entire issue of common stock been found to be non-voting. In all other cases the non-voting common represents only a part of the total common issue, which total is divided into two classes, alike as a rule in all respects except that one class has voting power and the other none. Of this group the best-known issues are the non-voting shares of three of the leading tobacco companies: American, Liggett and Myers, and R. J. Reynolds. Other common shares belonging to this group are those authorized by the McCrory Stores, Pan American Petroleum, Gabriel Snubber, Pierce Oil, and the Bethlehem Steel Corporation before that company was recapitalized in 1922. One of the latest of the larger corporations to adopt this plan of subdividing common stock is Dodge Bros. in their refinancing of a year or so ago.

The following table presents the authorized and issued voting and non-voting common stock capitalization of the above-mentioned companies, together with the ratios of the voting common to total common authorized and issued.

at any meetings of stockholders, except . . . for increasing or decreasing the capital stock, dissolving the corporation, or passing upon other matters with respect to which the statute expressly gives the power to Preferred stockholders to vote."

Company	Voting common		Non-voting common		Per cent of common voting to total common	
	Authorized *	Issued *	Authorized *	Issued *	Authorized	Issued
American Tobacco	\$50,000,000	\$40,242,400	B. \$100,000,000	\$57,388,550	33.3	41.2
Liggett & Myers	21,496,400	21,496,400	B. 44,363,800	21,471,875	32.6	50.0
R. J. Reynolds	10,000,000	10,000,000	B. 70,000,000	70,000,000	12.5	12.5
Dodge Bros.	B. Shs. 500,000	500,000	A. Shs. 2,535,000	1,500,000	16.5	25.0
McCrary Stores	Shs. 500,000	362,008	B. Shs. 150,000	49,396	76.9	88.0
Pan American	55,000,000	50,077,850	B. 150,000,000	83,748,850	26.8	37.4
Pierce Oil	33,000,000	29,622,831	B. 20,000,000	....	62.3	100.0
Gabriel Snubber	B. Shs. 2,000	2,000	A. Shs. 198,000	198,000	1.0	1.0
Bethlehem Steel (old)†.	15,000,000	15,000,000	B. 75,000,000	45,000,000	16.7	25.0

* Authorized and issued figures from Moody's, 1925.

† Figures of authorized and issued from Moody's, 1922. In this year the shareholders voted a recapitalization plan under which the Common B became voting stock.

II. CONTINGENT VOTING INDUSTRIAL STOCKS

It is not by the employment of either preferred or common non-voting stocks, however, that shareholders are most commonly limited in their voting control. In much more general use is that type of issue which, for want of a better term, may be described as contingent or conditional voting stock.

All stockholders' voting rights may be classified as either fixed or contingent. The first term refers to a voting control, which, irrespective of any occurrence, remains the same throughout the life of the corporation, in the absence of affirmative action altering the charter, by-law, or other provisions governing these rights. Voting rights of the second type are peculiar in that the voting control of the various classes of shareholders is not a definitely fixed thing, but may vary from time to time, depending upon the occurrence or non-occurrence of certain specified contingencies. For example, if a corporation issuing Class A and Class B stock provides that only Class A stock shall have the right to vote, and that Class B stock shall have no voting power whatsoever, the voting rights of each of these classes of shareholders are fixed. If, however, the corporation's contract with its shareholders provides that Class A shares shall have the exclusive right to vote so long as dividends are paid on Class B stock, but that, in the event of the non-payment of such dividends, Class B shares shall be entitled to the exclusive voting power, the voting rights of these two classes of shareholders are not fixed, but contingent. Under these circumstances, in other words, the exercise of voting rights by Class A shareholders is conditioned or contingent upon the continuance of dividends upon Class B stock, while the operation of the voting rights of the latter is de-

pendent upon the non-payment of these Class B dividends.

The earliest industrial preferred stocks belonging to this class which have been noted by the writer are those of the American Caramel and Royal Baking Powder companies, two combinations which were organized in 1898 and 1899 respectively. The latter issue was non-voting, except that in case any preferred dividend due remained unpaid for four months, the preferred became entitled to elect a new board of directors, and the voting power of the common shareholders was to cease entirely. In contrast to most of the industrial consolidations formed during the period from 1898 to 1903, the preferred and not the common stock of the Baking Powder Company was offered to the public, the latter being retained almost exclusively by those interested in the organization of the combination. The explanation of this situation lay in the fact that the baking-powder business was very profitable.⁵ In consequence, the owners of the closely held stock of the predecessor companies chose to retain the common rather than the preferred shares of the new organization.

The American Caramel issue also was ordinarily non voting, except that, as to additional preferred stock or bonds, the execution of mortgages, or a change of the by-laws with reference to any of these matters, consent

5. Nearly fifteen years before the formation of the combination, litigation occurred which indicated that the stock of the old Royal Company was worth approximately \$2,250 per share. The treasurer of the consolidated company also testified that it was a fair inference that the average net earnings of the combined companies for the four years preceding the consolidation were \$1,500,000 a year. As the company was capitalized at twenty millions, equally divided between common and preferred, this represented a return in excess of 7 per cent upon the total authorized capitalization. The preferred stock, however, carried only 6 per cent, which, assuming that all the preferred and common was issued, would leave \$900,000 available for distribution on the common, or the equivalent of 9 per cent. Cf. Testimony of John Morris, XIII U. S. Industrial Commission, 386 ff.

of three fourths of the preferred shares was required. In the event that in any year the dividend on the preferred was passed and not paid, the preferred shareholders became entitled to exercise all the rights of common shareholders.⁶

Non-Voting — Contingent Voting. — It has already been stated that there are comparatively few fixed-voting preferred issues which are entirely deprived of voting control. The same is generally true of the status of contingent voting preferred shares during the time when their contingent voting rights are inoperative. Out of issues of some seventy-five or more corporations, less than a dozen preferred stocks are completely excluded from the exercise of voting power during this period. This minority group is composed of preferred issues made by Procter and Gamble (6 per cent, Royal Baking Powder, E. I. du Pont de Nemours (non-voting debenture), Willys Corporation (existing and 2d prefs.), Lamson and Hubbard, Houghton and Dutton (1st pref. and pref.), and Beacon Manufacturing.

Non-Voting with Exceptions — Contingent Voting. — The ordinary status of a large proportion of the contingent voting preferreds (before the occurrence of the contingency) is that of non-voting stocks except with reference to those acts which it is deemed might affect unfavorably the position of this class of shareholders. These matters, as with fixed voting stocks, usually require the vote or consent of two thirds or three fourths of the preferred, and include most generally the following corporate acts: (a) the making of mortgages or liens (purchase-money mortgages being sometimes specifically excepted); (b) the issuance of bonds, notes,

6. An earlier issue of contingent voting preferred was that of the Norfolk and Western Railroad in 1897, tho the contingent rights were applicable for only a limited period of years. See below, on Public Utility and Railroad Non-Voting and Contingent Voting Stocks, p. 381.

or other evidences of debt maturing more than a specified period from date of issue, most commonly perhaps one year; (c) the authorization or issue of additional preferred stock, either of priority to, or on a parity with, the particular preferred issue involved; (d) sales, sometimes in whole, sometimes in part, of property or assets.⁷

Contingent voting preferred issues having one or more of these exceptions to their ordinary non-voting status have been made by such companies as American Caramel, Firestone Tire and Rubber (6 and 7 per cent), Timken-Detroit Axle (sinking fund pref.), California Petroleum, Manhattan Shirt, Owens Bottle Machine, Regal Shoe, Republic Rubber (1st), Sherwin-Williams, Corona Typewriter (1st), Kelly-Springfield (8 per cent), Steel and Tube Co. of America, Fisher Body, International Fur Exchange, Deere & Co., and Sinclair Consolidated Oil.⁸

Other corporate acts on which the contingent preferred shareholders vote, when contingent rights are not operative, include for example (a) changes in the by-laws (American Caramel), (b) changes in the par value of the preferred (Firestone Tire and Rubber, 6 and 7 per cent), (c) charter amendments affecting preferred (Universal Leaf Tobacco), (d) additional bonds under

7. These provisions sometimes apply not only to the company issuing the preferred but also to its subsidiaries.

8. Cf. also issues made by Aetna Explosives, Root and Van Dervoort Engineering, Miller Rubber, Simmons, Amalgamated Sugar, Cutler-Hammer, Orpheum Circuit, Otis Steel, Willys (1st pref.), Mullins Body, J. I. Case (1st), Central Teresa Sugar, Dodge Manufacturing, Eastern Manufacturing (1st and 2d pref.), General Tire and Rubber, Graton and Knight, Gorton-Pew Fisheries, Halle Bros., General Motors (pref., 7 per cent debenture, and debenture), W. H. McElwain (1st), Ponemah Mills (1st), Wickwire Spencer Steel (1st), Winchester Co. (1st), American Rolling Mill (6 and 7 per cent), Atlas Power, Mead Pulp and Paper (special pref. and pref.), Aluminum Manufactures, Firth-Sterling Steel, Amalgamated Leather Cos., Hood Rubber, Hercules Powder.

present mortgages (Owens Bottle Machine), (e) change in voting power of preferred (Regal Shoe), (f) dissolution (Brunswick-Balke-Collender, and Deere & Co.), (g) paying common dividends when quick assets are less than twice current liabilities (Corona Typewriter 1st), (h) change in purposes or objects for which organized (Wickwire Spencer Steel, 1st, and Deere & Co.), (i) consolidation (Deere & Co.), (j) guaranties (Graton and Knight).

Non-Voting for Directors — Contingent Voting. — A much less numerous group of shares than the foregoing is composed of contingent preferred issues which are specifically non-voting for directors until the contingencies occur. To this group belong the Brown Shoe and Cluett, Peabody preferreds, and issues made by Emerson-Brantingham, Continental Can, B. F. Goodrich (old), Kelsey Wheel, National Cloak and Suit, Pierce Oil, Studebaker, Woolworth, S. H. Kress, and May Department Stores.

Prior to such contingent rights becoming effective, these preferred issues exercise full voting control, or something more, on all matters *other* than the election of directors. While Cluett Peabody preferred shareholders have merely full voting rights, the balance of these stocks exercise extra voting powers on various subjects; this in addition to their full voting rights on all other matters than the election of directors. Such extra voting control applies to those classes of acts upon which contingent voting preferred stocks usually exercise extra voting powers, that is, the making of mortgages or liens upon the property, the issuance of bonds or notes, or of stocks with priority to, or on a parity with, the existing preferred issues, sales of property or assets, and the like. Also, as with the contingent issues previously considered, the usual vote or

consent required on these matters is two thirds or three fourths of the preferred shares. In some cases the vote of two thirds or three fourths of the common is likewise required.

Full Voting — Contingent Voting Preferred. — A smaller group of contingent voting preferreds than any of the foregoing is composed of issues which ordinarily exercise full voting rights on all matters,⁹ but are entitled to more than such full voting power upon the occurrence of specified contingencies. This group comprises issues made by the Bucyrus Co., American Sumatra Tobacco, Holly Sugar, Hodgeman Rubber, and National Fisheries, five in all. The small number of stocks of this type is no doubt accounted for by the fact that an issue of this character exercises much greater and more effective voting control than the ordinary full voting preferred share.

III. CONDITIONS WHICH RENDER OPERATIVE THE CONTINGENT VOTING RIGHTS OF INDUSTRIAL PREFERRED STOCKS

Dividend Defaults. — The next step in this study logically relates to the particular conditions which give rise to the exercise of conditional voting rights. Without exception, the contingent preferred issues examined, specify that voting rights become active upon certain defaults in the preferred dividends. The extent of the default required varies between the corporations from merely the passing of a single quarterly payment to practically unlimited arrearages. Four quarterly dividend defaults is apparently most frequent, and is specified by some 18 issues of 16 corporations ex-

9. With perhaps the usual extra voting control on certain species of corporate acts which might be deemed prejudicial to the interest of the preferred shareholder.

amined.¹ Two quarterly defaults is likewise frequent, and is required in 10 issues made by the same number of corporations.² Timken-Detroit Axle (sinking fund pref.) and Woolworth specify three. General Tire and Rubber preferred, however, makes the voting power effective if there is a default in any quarterly dividend, a plan also followed in the case of Miller Rubber and the 6 and 7 per cent issues of the old W. H. McElwain Co.³

In many other cases the extent of the dividend defaults is measured otherwise than by quarterly dividends. The dividend contingency of American Caramel preferred is, if in any year the dividends on the preferred are passed, and not paid; of the Bucyrus Company, if a dividend of 7 per cent is not declared and paid, in the twelve months prior to each annual stockholders' meeting; of Firth-Sterling Steel, if dividends are in arrears; of Hood Rubber, if a dividend of 7 per cent has accumulated, and is not paid; of National Fisheries, if a dividend in excess of 7 per cent is not paid or set aside; of Aetna Explosives, if there is a failure for eight consecutive months to pay dividends of Eastern Manufacturing first and second preferred, if \$3.50 dividends on either are in arrears.

So far as the theory of these provisions is that the preferred shareholder is entitled to voting power in order to protect his dividend rate, — a theory supported by

1. Amalgamated Leather, Procter and Gamble (6 per cent), Simmons Co., Brown Shoe, California Petroleum, Cluett, Peabody, Continental Can, Deere & Co., Orpheum Circuit, B. F. Goodrich (7 per cent pref.), International Fur Exchange, National Cloak and Suit, Owens Bottle Machine, Pierce Oil, Willys (existing and 1st and 2d prefs.), American Rolling Mill (7 per cent).

2. Amalgamated Sugar, Hodgeman Rubber, S. H. Kress, Holly Sugar, Kelsey Wheel, Otis Steel, Studebaker, Kelly-Springfield (8 per cent), Fisher Body, and May Department Stores. In addition two quarterly defaults in J. I. Case first preferred dividends give voting power to both the first and second preferred issues.

3. The 6 per cent second as well as the 7 per cent first became voting upon a quarterly dividend default on the first preferred.

the fact that voting control practically always reverts in the common when arrearages in dividends have been paid, — the bulk of these conditions are not well adapted to securing this result. Where indeed contingent voting rights become operative upon the passing of a single quarterly dividend, no fault can be found; but these issues are relatively few. Even when only two quarterly defaults are needed, it is obvious that the preferred shareholder may receive only three fourths of his full dividend in any year and may be obliged to wait perhaps until the end of the next year for a second quarterly default. Where four or five such quarterly defaults are necessary, the shareholder may receive only three fourths of his full rate for three or four years, and meanwhile his contingent voting control remains inoperative. Moreover, in many cases the contingent rights are not effective immediately upon the default of the specified dividends, but are prolonged by requiring that the dividends passed must, in addition, be or remain in default for some specified period. For example, any quarterly default is ground for the William Whitman preferred shareholders to exercise their contingent voting rights, *provided* the installment in question remains in arrears for twelve months. Somewhat similarly, in the case of Atlas Powder 6 per cent preferred, there must be a default for a continuous period of one year in some part of the preferred dividend. In an issue of the Emerson-Brantingham Company, however, only a six months period from the default of any quarterly dividend is necessary to render contingent rights effective; and Universal Leaf Tobacco specifies only 60 days after a default for the fourth semi-annual dividend period.⁴

4. Cf. also Royal Baking Powder: any dividend due and unpaid for four months, Booth Fisheries (1st pref.), dividends for preceding year

Where, as in some cases, the contingency specified is a definite amount of unpaid dividends this amount may correspond to the dividend rate. Thus Halle Bros. 7 per cent preferred requires 7 per cent dividends in arrears to render operative the contingent voting rights, and the Graton and Knight 7 per cent and Central Teresa Sugar 8 per cent issues require 7 and 8 per cent arrearages respectively. Ponemah Mills, however, fixes 10½ per cent, and American Sumatra Tobacco Company 14 per cent. Obviously, in the case of any of these shares there may be partial dividend defaults for several years without contingent voting rights becoming active.

Such possible postponements are important defects in the dividend default provisions of the foregoing issues. But other issues are, unfortunately, so arranged as to permit even more extensive and serious defaults in preferred dividends. In this class of shares the contingent voting rights become effective, not upon the default of two, three or four quarterly dividends, as the case may be, but upon the failure of the corporation to pay two, three, or four *consecutive* or *successive* quarterly dividends. Issues made by the Corona (1st) and Underwood Typewriter companies, Firestone Tire and Rubber (6 and 7 per cent), and American Rolling Mill (6 per cent), specify two of such defaults; while Manhattan Shirt, Mullins Body, and Republic Rubber (1st) issues require three. Eleven issues out of nineteen made by sixteen corporations, however, specify four.⁵

The significant feature of this type of stock is the

not paid or set aside for payment within 90 days after April 1st; General Motors (pref. 7 per cent deb. and deb.), any dividend regularly due if same remains in arrears for 6 months.

5. Cutler-Hammer, Manhattan Electric Supply (1st and 2d), Dodge Manufacturing, Sherwin-Williams, Gorton-Pew, Lamson and Hubbard, Mead Pulp and Paper (special pref. and pref.), Root and Van Dervoort Engineering, Steel and Tube Company of America.

fact that it is possible for an indefinite amount of defaults to occur or accumulate (in the case of cumulative stocks) upon the preferred issues. In other words, these issues do not (as with those specifying merely a certain number of quarterly dividends) set any maximum limit to the amount of the defaults which can take place without the contingent issue obtaining voting rights. The use of the words *successive* or *consecutive* renders it practicable for a concern specifying two quarterly dividends to reduce the prescribed rate by one fourth for an indefinite period. Where three and four successive periods are required, the preferred shareholder's rate may be reduced respectively to one half or one fourth of that to which he is entitled for a similar indefinite period. And where four consecutive quarterly dividends are necessary, there must be a complete default for a full year before the preferred shareholder can vote; a situation which, as regards preferred issues in general, occurs with comparative rarity.

One may be permitted to wonder why corporations specifying four consecutive quarterly dividends do not adopt the more simple formula of the Regal Shoe Company, which provides that the contingent voting rights of the preferred shall not become operative except when no dividends whatever are paid for a period of one year. With such a provision it would not be necessary for corporations to squeeze out even a full quarterly dividend in each year to prevent the preferred shareholders from voting.

In a few issues are to be found even more serious possibilities of postponing the operation of contingent voting rights. Sinclair Consolidated Oil requires a default in "full dividends" for 24 consecutive months to give the preferred voting powers — an ambiguous provision. If this is interpreted as a default in some part

of the full dividend, it constitutes one of the longest postponements of contingent rights after the event.⁶ If the worse interpretation be taken, it probably means that nothing short of an utter failure of earning power would give voting rights to the preferred shareholders. Similar undue postponements by Beacon Manufacturing and Brunswick-Balke-Collender avoid this ambiguity. Both require a failure, for each of two consecutive years, to pay dividends of 6 and 7 per cent respectively on their preferred issues.

Other contingencies. — The occurrence of contingencies other than the failure of dividends is also, in some cases, the occasion for the exercise of voting rights. As a rule, such arrangements are intended to protect the preferred shareholder against defaults in certain agreements which have been designed for his protection. Defaults in covenants relating to the maintenance of a specified asset position and to the retirement of preferred stock are the most usual types. Thus, failure to maintain (a) net quick assets (Sherwin-Williams, General Tire and Rubber, International Fur Exchange, Firestone Tire and Rubber 6 and 7 per cent); (b) total net assets (Firestone Tire and Rubber 6 per cent, Sherwin-Williams); (c) net current assets (Timken-Detroit Axle sinking fund preferred, Graton and Knight and Miller Rubber); (d) net tangible assets (Timken-Detroit Axle sinking fund preferred); (e) net assets (International Fur Exchange); (f) current assets (Aluminum Manufactures) — are grounds for voting by the preferred stock. In certain cases, however, the default must have continued for some specified length of time. Similarly, the preferred may become voting through failure (a) to redeem or retire the preferred stock according to the agreements with the pre-

6. But see (below) five consecutive year default provision of Wheeling and Lake Erie preferred.

ferred shareholders (Firestone Tire and Rubber 6 and 7 per cent, Aluminum Manufactures, Miller Rubber); (b) to make preferred stock sinking fund payments (Timken-Detroit Axle sinking fund, William Whitman, Fisher Body); or (c) to comply with the sinking fund provisions (Emerson-Brantingham).

Another class of covenants, of greater significance than the foregoing, includes those which make contingent voting rights operative whenever earnings fail to reach some specified level. This type of covenant is found in the 6 and 7 per cent debenture stock issues made by General Motors, in the E. I. du Pont de Nemours "non-voting" debenture stock, and in the Atlas Powder preferred. Such earnings contingencies are in principle much more desirable than the dividend contingencies already discussed. While in the last analysis dividends must be supplied from profits, they are frequently paid when earning power is declining, or has, perhaps, completely failed. Logically, therefore, contingent voting rights should be based rather upon earnings than upon dividends, which is the common method.

But earnings covenants, like dividend covenants, may be so drawn that the contingent voting rights do not become operative as promptly as they should. In the case of the Atlas Powder Company, for example, the preferred stock becomes entitled to voting rights when the net earnings for each of two consecutive calendar years have fallen below the amount necessary to pay the dividends accruing on the preferred shares. Obviously, in this case shareholders do not obtain their voting rights until the earning power of the corporation is in a most unsatisfactory condition.⁷ The correspond-

7. This statement is qualified by the fact that this preferred issue also becomes voting if there is a default for a continuous period of one year in any part of the preferred dividend. The Hercules Powder Co. has the same covenants as to earnings and dividends.

ing covenants of both General Motors and E. I. du Pont de Nemours are therefore more desirable. If earnings in any calendar year amount to less than 9 per cent on the 7 per cent debenture stock of the former company, both this issue and its debenture stock obtain full voting rights. Unless the same rate of earnings (9 per cent) in any calendar year is shown on the entire debenture stock, both "voting" and "non-voting," in the case of E. I. du Pont de Nemours, the "non-voting" issue obtains equal voting power with the "voting" debenture and common stocks.⁸ Tho decidedly superior to the Atlas Company's contingency, even these two provisions are open to the criticism that the percentage of earnings required is not fixed high enough to constitute an adequate factor of safety.

IV. EXTENT OF CONTINGENT VOTING CONTROL OF INDUSTRIAL PREFERRED SHAREHOLDERS

The next matter for consideration is the extent to which voting power is given shareholders upon the occurrence of the contingencies discussed. This is the crucial test of the value of the contingent voting rights. If no substantial degree of control is obtained, this type of issue may be of little more value than so much non-voting stock.

Contingent exclusive voting. — While many contingent voting preferreds leave much to be desired in this respect, the bulk of them obtain substantial voting powers when the various contingencies occur. At the same time, it can scarcely be said that most of them obtain as extensive voting rights as would appear desirable, in view of their voting status prior to such occurrences. Several corporations flatly provide that, when contin-

8. Cf. contingent voting rights of these issues in the event of a default of dividends, in the following section.

gent rights become operative, the exclusive voting power in the affairs of the corporation shall pass to the preferred shareholders until dividend or other defaults are cured. This is the case with issues made by the Royal Baking Powder, Universal Leaf Tobacco, Bucyrus, Hodgeman Rubber, Owens Bottle Machine, Lamson and Hubbard, Beacon Manufacturing, and Fisher Body. The contingent voting 7 per cent debenture and debenture stocks of the General Motors Company share exclusive voting rights in the affairs of the corporation in the event of a dividend default upon either of them. Similarly, the first and second preferred shares together possess the exclusive voting control of the J. I. Case and the Eastern Manufacturing companies⁹ when a default occurs on their respective first preferred issues. In the case of the E. I. du Pont de Nemours Company, a default in dividends on the debenture stock gives exclusive voting power to the "voting" and "non-voting" debenture stock combined.¹ Timken-Detroit Axle sinking fund preferred is also entitled to exclusive voting control if there has been a default in the payment of five quarterly dividends. In case of defaults of three quarterly dividends or of other covenants, however, this issue obtains merely full voting rights, tho entitled to elect one half of the directors.

Contingent extra voting. — Two other corporations also place the contingent voting preferred in an exceptionally strong position when their rights become operative: Sherwin-Williams and Halle Bros. The preferred of the former and the first preferred of the latter are both entitled to cast four votes for each share.

9. This is subject to the qualification in the Eastern Manufacturing Company that, if the outstanding 2d preferred equals or exceeds the 1st preferred, the 1st preferred alone shall have exclusive voting power.

1. For the contingent voting rights of the General Motors and the E. I. du Pont de Nemours issues in the event of a default in the earnings covenants, see the last subdivision of the preceding section.

This is sufficient to give each of these issues a majority voting control, on an authorized basis in the case of Sherwin-Williams, and on either an authorized or issued basis in the case of Halle Bros. But issues with relatively strong contingent voting rights, such as the foregoing, comprise a decided minority of the industrial contingent preferreds examined.

Contingent full voting. — By far the largest number of the issues — nearly half — fall into the group which obtains full or equal voting rights when the various contingencies occur.² How far such a restoration of full voting rights is valuable to the preferred shareholders is largely a question of the relative amounts of the common and preferred outstanding. There are a great many preferred stocks which contingently become full voting, the outstanding amounts of which are much less than the outstanding common. Unless cumulative voting is provided for, or the voting control of the preferred equalized with the common, either by making each issue equal voting as a class, or by giving the preferred the right to cast, for each share, enough votes to make the total preferred votes the same as the total common votes, such voting rights may mean very little. As few issues of completely full voting pre-

2. American Caramel, Atlas Powder, Hood Rubber, Procter and Gamble (6 per cent), Mead Pulp and Paper (special pref. and pref.), Cutler-Hammer, Orpheum Circuit, Otis Steel, Regal Shoe, Willys (existing pref.), Brunswick-Balke-Collender, Mullins Body, Republic Rubber (1st), Aluminum Manufactures, Central Teresa Sugar, Dodge Manufacturing, General Tire and Rubber, Gorton-Pew Fisheries, Houghton and Dutton (1st pref. and pref.), Corona Typewriter (1st), Kelly-Springfield (8 per cent), Firth-Sterling Steel, W. H. McElwain (1st and 2d), Ponemah Mills, Quaker Oats, American Rolling Mill (6 and 7 per cent), Steel and Tube Company of America, Timken-Detroit Axle (sinking fund preferred defaults in three quarterly dividends and certain other covenants), Booth Fisheries (1st), Hercules Powder, Winchester (1st). Eastern Manufacturing 2d preferred has 20 votes for each share, in order to make the voting control as between common and preferred in proportion to par value.

ferred stocks contain any one of these provisions, it is not surprising that few contingent full voting preferred shares incorporate them. However, Miller Rubber preferred and also the 6 and 7 preferred issues of Firestone Tire and Rubber are conditionally equal voting as a class with the common shares. In the case of the Simmons Company, cumulative voting for directors is required during periods when the contingent voting rights of the preferred are operative; at such times these shareholders exercise concurrent voting powers with the common.

Exclusive voting for directors. — Nine contingent preferred stocks of a corresponding number of corporations obtain the exclusive right to vote for directors.³ Preferred issues of S. H. Kress, Kelsey Wheel, Amalgamated Leather and National Cloak and Suit have the same contingent control, and in addition the entire voting power for the amendment of by-laws. Since the board of directors in the last analysis controls the management of the corporation's business, such contingent exclusive voting powers may well be deemed superior to the restoration of full voting power (share for share) whenever the outstanding preferred shares are substantially less in number than the common. Indeed, they might be preferred by many to the restoration of full voting rights, where the numbers of preferred and common shares outstanding are equal.⁴

In other issues the contingent voting control weakens. Manhattan Shirt preferred shareholders are entitled to elect two thirds of the directors and ten con-

3. Brown Shoe, Cluett, Peabody, Continental Can, Holly Sugar, Pierce Oil, Studebaker, Graton & Knight (dividend and sinking fund defaults), F. W. Woolworth, and May Department Stores.

4. Out of the 13 stocks which are contingent exclusive voting for directors it may be noted that 9 issues belong to the group which are non voting for directors before the occurrence of the contingency which gives them voting rights.

tingent issues of eight corporations elect a majority.⁶ Preferred issues made by B. F. Goodrich and International Fur Exchange give the preferred stock power to elect one half of them while defaults in certain asset covenants entitle Graton and Knight preferred shareholders to elect one less than a majority. Amalgamated Sugar preferred shareholders, however, can select only one third of the directorate. In issues of Emerson-Brantingham and William Whitman, the preferred shareholder obtains merely the right to vote for directors.⁶

Contingent voting common issues.—The corporation issues examined by the writer have disclosed only one issue of contingent voting common shares. This is a Class B common stock of the Barnsdall Corporation, which is ordinarily non voting,⁷ but becomes entitled to vote upon the failure to pay dividends for 12 months.

V. PUBLIC UTILITY AND RAILROAD NON-VOTING AND CONTINGENT-VOTING STOCK

We pass now from industrial stocks to those of public utilities and railroads.

Utilities.—So far as the writer's examination has extended, contingent and non-voting stocks are relatively much less numerous among public utility issues than among those of industrial corporations. But this study covered less than 80 of the former type of companies as compared with nearly three times that number of the

5. California Petroleum, Deere & Co., Manhattan Electric Supply (1st and 2d, voting together on defaults in terms of either), Willys (1st on defaults on 1st, on defaults on 2d only, 1st and 2d together), Sinclair Consolidated, American Sumatra Tobacco, National Fisheries, and Root and Van Dervoort Engineering.

6. It should be noted that most of those issues where the dividend contingency is on a consecutive basis merely restore full voting rights.

7. Except on changes in authorized stock, increases or decreases of stock, or increases or decreases of par value.

latter. A more comprehensive survey of public utilities, particularly the issues of holding company subsidiaries, would very likely disclose a development of contingent- and non-voting issues quite comparable with that in industrial corporations. Control of subsidiary companies, either organized or acquired, is more easily and economically procured and maintained if the volume of full voting securities is small. Contingent and non-voting issues permit the use of stock in financing the holding corporation's subsidiaries without the parent company being obliged to increase its investment in them in order to preserve its voting control. Where holding companies have been organized on as extensive a scale as in the public utility field, non-voting and contingent-voting shares therefore are likely to find important and increasing employment.

Among the public utility issues examined there were several non-voting and contingent voting stocks, but no issues of either non-voting or contingent voting common. The Empire District Electric Company has a completely non-voting preferred issue, as has also the Georgia Railway and Power (1st preferred). The United Light and Railway is unique in having made three such issues, a first, participating, and a second preferred. These three non-voting stocks represent \$37,500,000 authorized stock capitalization against \$12,500,000 of authorized voting common.

Besides these non-voting preferreds, the group of utility companies revealed eight corporations issuing contingent voting preferreds. Only one of these issues was completely non-voting prior to the occurrence of the contingency giving the preferred shareholders voting control (Gas and Electric Securities Co.). Two contingent preferred issues of Appalachian Power are ordinarily non-voting except with reference to the mak-

ing of mortgages or liens and the issue of bonds or prior or parity stock. Issues of a similar type are the 6 per cent cumulative preferred of the Philadelphia Company and the preferred issue of Tri-State Telephone. Kansas City Power and Light first preferred is a full voting stock with additional contingent voting rights and extra voting power on consolidations, mergers, leases, sales, and the like. Preferred issues of the Central Arkansas Railway and Light, Springfield Railway and Light, and Pennsylvania Central Light and Power belong to the group of contingent voting stocks which are non-voting for directors but otherwise entitled to full voting rights⁸ prior to the occurrence of specified contingencies.

The last three issues, which are non-voting for directors, specify two quarterly dividend defaults as the contingency rendering voting rights operative. Appalachian Power, for both issues, specifies two consecutive quarterly dividends and also defaults in redemption or certain assets covenants. Gas and Electric Securities Co. specifies dividends in arrears for one year and Kansas City Power and Light (1st) 12 consecutive months default in payment of full dividend. Tri-State Telephone says merely default "in the payment" of dividends, and Philadelphia Company (6 per cent) default in "prompt payment" — whatever these phrases may mean.

Two of the three issues which are non-voting for directors (Central Arkansas and Springfield Railway and Light) give the exclusive voting power for directors to the preferred upon the occurrence of the specified contingencies. The other issue, Pennsylvania Central Light and Power, gives the preferred the right to elect

8. The first and last companies also exercise certain extra voting powers on mortgages, etc.

a majority of the directors only. Gas and Electric Securities, Philadelphia Company (6 per cent) and Tri-State Telephone restore full voting power. Each of the preferred issues of Appalachian Power and the 1st preferred of the Kansas City Power and Light have contingent equal voting powers as a class. In the event of a default in the dividend or other covenants, each of the first two issues obtains the right to cast votes equal in number to the outstanding common. The first preferred of the Kansas City Power and Light Company secures voting rights equal to those of all the other classes of stock (common and participating preferred) combined.

Railroads.—Practically all the railroad stocks of the 40 companies examined were equal or full voting shares. No issues of non-voting preferred or of non-voting or contingent voting common were found. However, the adjustment preferred of the Norfolk and Western issued in 1897, and the prior lien preferred of the Wheeling and Lake Erie Railroad of 1916, gave certain contingent voting rights to their preferred shareholders. The former provided that "during the period of five years after the organization of the Company, unless full yearly dividends at the rate of four per cent per annum shall have been paid on the Adjustment Preferred Stock for three years before the expiration of that period, two thirds of the whole Board of Directors of the Company shall be elected, by separate ballot, by vote of the holders of a majority of the Adjustment Preferred Stock." After this five-year period, or after full dividends had been paid for three years, the Adjustment Preferred became equal voting with the common, share for share. Holders of the prior lien stock of 1916 of the Wheeling and Lake Erie Railroad were given the right to elect a majority of the directors

whenever and as often as the corporation failed to pay dividends at the rate of seven per cent per annum on the Prior Lien stock *for five consecutive years*, and also to vote with the preferred and common for the remaining directors. Otherwise, voting rights were proportionally equal.

VI. ARGUMENTS FOR AND AGAINST NON-VOTING STOCKS

In favor of the use of non-voting preferred issues, or of preferred stocks exercising limited voting control, it may be urged that these securities have come to occupy an investment position to such an extent that there is no reason why they should not be thus restricted. Such a view has no doubt been promoted and fostered by the banking houses and others, through the creation of preferred stocks dressed up in numerous respects to resemble debenture bonds. These issues provide for the retirement or redemption of the preferred by the operation of a sinking fund, or otherwise, and the terms of issuance often contain in addition, various covenants, the character and form of which are substantially the same as those of similar covenants entered into with debenture bondholders.

It is true that many preferred stocks possess an investment standing which compares favorably with that of many bond and note issues. Hence, it is argued, there is no more impropriety in arrangements whereby stockholders contract away their voting rights in order to obtain this favorable position, than there is in conditions which require the preferred shareholder to accept a fixed and limited dividend rate in exchange for preference in the distribution of profits.

Whatever the logic of this argument, so far as some limitation of the voting rights of preferred stockholders

is concerned, it is not to be regarded as a valid reason for the issuance of non-voting preferred shares. Investment position is rather a question of fact than of the covenants and guaranties made by the corporation. These may or may not be fulfilled. In the latter event the non-voting preferred shareholder is powerless to help himself, whereas the debenture bondholder can enforce his claims.

Still less justification can be found for the issue of non-voting common stocks. Because of a preferential position with reference to the distribution of profits, and because of the general use of various protective covenants, some plausibility is lent to the proposition that preferred shares can properly be made non voting. So far as non-voting common issues are concerned, however, the argument does not apply, because the non-voting common shareholder is not entitled to any preferences, either by way of profits distribution or otherwise, as compared with the voting common stockholder. Moreover, in the same corporation non-voting common may be regarded as something less of an investment than voting common, since the former usually tends to sell at a discount under the latter.

A second argument in favor of non-voting stocks is that such issues lead to conservative financing by promoting the use of stocks in preference to funded debt. It cannot be denied that the use of common and of preferred shares for procuring capital is an excellent method of financing. These securities involve no fixed obligations for the payment of interest and principal, with the possibilities of receivership and other financial complications, which exist in the case of bonds and notes. Conceding all this, there is still no basis upon which such advantages can be admitted as a sound argument for non-voting shares. If financing is done

by voting stocks, the corporation will receive as much money and, perhaps, somewhat more than if non-voting shares are employed. If the managing authorities so fear a decrease of their control that they are not willing to use a voting issue, they still have the alternative of selling bonds or notes. Certainly it is an absurdity to argue that conservatism in financing justifies the use of non-voting stock, on the ground that otherwise the management of a corporation might adopt the less conservative method of issuing bonds or notes in order to preserve their voting control.

It has also been advanced in justification of non-voting shares that stockholders do not regard themselves as directly interested owners of the corporation. They consider that they are investors in the same way as bondholders, except that they expect a higher rate of return on their investment and assume more risk.⁹ It is said to be useless to accord voting rights to shareholders, because they will not be used. The average stockholder does not attend the annual or any other of the shareholders' meetings. More than half the time, probably, he does not even take the trouble to fill out a proxy for such a meeting.¹ In many cases he is unable to interpret

9. Cf. New York World, Jan. 23, 1926, p. 4.

1. For this last situation, however, it must be recognized that the corporations are themselves largely to blame. The board of directors formulates a policy and sends out a summary to stockholders, together with a proxy authorizing a certain person or persons to attend the annual or other meeting and vote the shareholder's stock. The stockholder is not asked to vote "yes" or "no" on the proposition, and his only alternative to filling out the proxy, and having his interest voted in the affirmative, is not to fill it out. By the latter course he very likely attempts to indicate his disagreement with the proposed measure, but he does not do so in a way to affect the final result. In practically all cases the interests backing the plan to be voted on control a sufficient number of shares to furnish a *majority of the quorum* necessary to transact business and carry through the proposal. In other words, unless a fight among the larger interests develops, so that both groups solicit proxies for and against a measure, the shareholder is really unable to express anything other than an affirmative opinion upon any measure

accurately the meaning or significance of the corporation's income statement and balance sheet, and, quite generally, he pays little or no attention to the corporation's affairs, or how it is managed.

While the truth of these propositions must be admitted, it is to be replied that this passive attitude of shareholders continues only so long as the corporation pays dividends and no longer. Few shareholders manifest indifference to its management and affairs after dividends fail; most of them acquire a lively interest. If their stock is totally deprived of voting power, however, this change of attitude remains no more than a change of attitude, because there is no way by which it can be transmuted into effective action.

From these considerations it would seem to follow that strictly non-voting stock issues should be prohibited. Nothing can alter the fact that stock is stock, and that the right to vote is one of the inherent rights of a shareholder. Granting the legal defensibility of abridging this right by contract, it is doubtful whether sound public policy should ever permit the right to be completely contracted away. Such contracts inevitably make for the concentration of voting control. They tend further to accentuate an already too extensive divorce of ownership and management. While this is, in the last analysis, a matter of defective state corporation laws, it is obvious that the stock exchanges could aid considerably in checking these classes of issues by refusing listings to non-voting shares. Even tho such action could have no effect so far as unlisted stocks are concerned, it is probable that the larger corporations,

proposed by the existing management of the corporation. Stock Exchange governors, who are reported to be considering the question of the voting rights of shareholders, would do well to consider whether measures should not be adopted to allow shareholders to vote "yes" or "no" on a proposition, either by proxy or by mail or otherwise.

which frequently desire a wide distribution and ready market for their securities, would not be so anxious to use non-voting issues, as to incur the penalty of non-listing.

In advocating the prohibition of strictly non-voting issues, however, the writer does not intend to imply that corporations' shares should universally be made full voting. While the substitution of the latter for the former type of issue would doubtless decrease to some extent the tendency to centralized voting control, it would not be a solution of the problem. Concentrated voting power is not peculiar to corporations with non-voting stock issues. On the contrary, it has existed for many years in numerous corporations where all the stock is full voting. And it will continue to do so until the average shareholder loses his present attitude — indifference to the corporation's management and affairs so long as his dividends are paid. It is this lack of interest which often permits the actual control of the corporation to pass into the hands of a relatively small coterie of men, who are able, as a rule, to maintain their power for at least as long a period as they are able to maintain dividends. All too frequently they are able to continue in power much longer. In many cases dividend failures are plausibly explained and the stockholders accept the explanation at face value. Only if the controlling interest so badly mismanages the business that the corporation is in danger of financial shipwreck do the stockholders sometimes revolt and effect a change. They seldom interfere before the financial condition of the corporation is serious, and often not even then.

This being the situation it is evidently less important that stockholders actually possess voting power at all times than that they possess voting rights which can

be exercised effectively and expeditiously whenever the corporation management gives occasion for so doing. While it is doubtless most desirable in theory that shareholders should regularly exercise such voting powers as they possess, it may be regarded as an ideal impossible of attainment, at least under present conditions. On the other hand, it is imperative from the standpoint of sound financial management that shareholders shall be in a position to act effectively in the affairs of the corporation *whenever* conditions develop which are detrimental to the interests of the corporation and its shareholders, or any class of them. To require all stocks to be full voting does not meet these conditions for the reason that a particular class of issue may be too small, relatively, to the total voting stock, to intervene successfully for the correction of undesirable developments.

Nor does the proposal for cumulative voting effectively solve the difficulty. This requirement doubtless is highly desirable and should be made a part of the corporation laws of every state. With cumulative voting it is next to impossible to prevent any class of shareholders (or a minority group if there is only one class) from obtaining representation on the directorate. This representation in turn renders it possible for each different interest to be thoroly advised as to all that is going forward. But if the number of outstanding shares of any class is less than that of another it may be impossible for the smaller group of shareholders to effect needed changes in conditions, despite representation on the directorate.

When corporate stock is classified into two or more full voting classes without appreciable differences, share for share, in powers and rights, a disproportion in the amounts issued may be corrected, either by giving each share of the smaller issue a sufficiently large number of

votes to equalize it with the other, or by making the different classes of shares each equal-voting as a class. With these provisions cumulative voting might also be required and would be desirable. Theoretically, the advantage of such stock issues so arranged should be that each class of shareholders would be able to keep the management and policies of the corporation what they ought to be, through constant participation in its affairs. But again one is faced with the comparative indifference which the average shareholder persists in so long as he obtains his dividends, and the probability that centralized control of the corporation would develop and continue, at least until dividend standards were not complied with. At such a time it might become possible to effect changes. Yet with voting power equalized as among the various classes, a serious struggle for control may develop. As a result, desirable changes in management or otherwise may be but partially effected or else indefinitely postponed.

VII. CONCLUSION: ADVANTAGES OF STRONG CONTINGENT VOTING ISSUES

Full voting rights, therefore, even when strengthened as suggested, may fall short of contingent voting rights as a means of bringing about thoroughgoing and expeditious readjustments in corporation affairs. It is the potential possibilities of contingent voting stocks in these respects, rather than their present characteristics, that suggest them as perhaps a partial solution of the problem of voting control. For example, by giving full voting preferred stockholders *sufficiently strong* contingent voting rights, it would be possible for such stockholders to make themselves felt in the corporation's affairs whenever it was important that they should do so. Granting that the average stockholder

will interest himself in corporation matters only when his interests are seriously threatened, it scarcely seems necessary that strong contingent voting issues, should normally be full voting, because the rights in question will seldom be exercised. As indicated, under ordinary conditions centralized voting control will probably occur even tho all shares are full voting. If the contingent control of a class of stock, therefore, is made sufficiently strong, it may perhaps be conceded that the issue might otherwise be of a very limited voting power or perhaps even completely non voting.

A strong contingent voting stock the writer would define as an issue conforming to the following three requirements: (1) The contingencies upon which voting rights become effective should be designed not only with reference to protecting specifically the interests of the contingent voting issue, but also for the purpose of ensuring conservative management. (2) The conditional voting rights should become effective promptly and expeditiously upon the occurrence of these contingencies. (3) The voting power given the contingent voting stockholders should be sufficient to permit them to make comprehensive changes in both the management and policies of the corporation if this is deemed necessary or desirable.²

Speaking generally, the contingent voting stocks discussed in this survey do not conform satisfactorily to these criteria. The contingencies specified in them are not as well adapted as they should be either to the protection of the preferred stockholders or to the conservative management of the corporation. They are also

2. Where contingent voting issues fail to conform to the foregoing requirements, the presumption is raised that they may be designed to maintain voting control in the hands of the active management of the corporation, tho perhaps to a lesser extent than is true in the case of the non-voting issue.

far too few in number. That contingency which invariably renders the preferred issues voting, and in numerous cases the only one which does so, is the failure of dividends. As already pointed out, it is frequently possible, if not usually, to pay dividends from other sources than the earnings of the year. Voting rights based on dividend defaults, therefore, are all too likely to become operative only after the damage has been done; in other words, after earnings have failed. Because of this fact, earnings default provisions should be incorporated in all contingent voting issues, either as a substitute for dividend default contingencies or in conjunction with them. The covenants should require that earnings show comfortable margins, say one hundred to three hundred per cent over the dividend requirements of the particular issue or issues. Other covenants to ensure conservative management should also be required. For example, contingent voting rights might be made operative in the event that the corporation failed to maintain (a) earned surplus at several times the amount of the regular dividends; (b) cash or liquid assets at two or three times dividend requirements; (c) the current ratio at not less than two to one, excluding inventory, or three to one including it; (d) cash at not less than 10 to 20 per cent of the current assets, or 20 to 30 per cent of the current liabilities.³ If such covenants are employed in conjunction with the suggested earnings default contingency, it is likely that when the earnings defaults occur, the financial situation of the corporation will be less serious than would otherwise be the case.

All contingent issues should also be given extra voting

3. All the foregoing terms should be carefully defined, and provision made for an independent audit to determine whether defaults in these covenants have occurred.

control on the making of mortgages and liens, the issue of bonds and notes, the creation of prior or parity shares, and similar matters, or else these corporate acts should be made the occasion for the exercise of contingent voting powers.

Many of the issues which have been examined are also defective in that the contingent voting rights fail to become operative with sufficient expedition. Issues like the preferred stocks of General Tire and Rubber, McElwain, and Miller Rubber, which become voting upon the passage of any quarterly dividend, reveal commendable promptness in making contingent rights effective. This is decreasingly true of the numerous issues employing two, three, four, or five quarterly dividends. When the contract with the preferred stockholders goes yet further, and makes voting rights dependent upon two, three, or four consecutive dividend defaults, the issue clearly fails to conform to the criterion of a strong contingent voting stock. Defaults for two successive years, as in the contingent preferred of Brunswick-Balke-Collender, or for five consecutive years, as in a similar issue of the Wheeling and Lake Erie, were, perhaps, never expected or intended to make the contingent voting power effective. These and all other similar postponements should be prohibited.

With reference to the degree of voting control accorded contingent voting shares when they are entitled to vote, those fifteen issues which give exclusive voting rights to the preferred shareholders leave nothing to be desired. This is the type of contingent control that is most desirable in conditional voting issues and should be employed when possible. Stocks with the contingent right to elect the entire board of directors, or even two thirds or a majority thereof, are also perhaps sufficiently strong to warrant the expectation

that the voting control will not be too dangerously centralized when they are employed. After all, the board of directors controls the affairs of the corporation, and contingent control of the board of directors is perhaps all that is necessary. A majority provision, however, may well be rejected on the score that it affords too narrow a margin of control to be thoroly effective. Issues with a lesser contingent voting control than this should not be permitted. The right to elect one third of the directorate (Amalgamated Sugar), for example, is of scarcely more value than if the stockholder were given the contingent right to cumulative voting. Even the contingent right to elect half the directorate is rather a means of blocking undesirable action than a method of effecting desirable and constructive changes. For reasons previously stated, the mere restoration of full voting rights should likewise be rejected as not giving the proper contingent voting control.

The concrete suggestion to which the foregoing survey leads, therefore, is that the problem of meeting the increasing concentration of voting control lies along the lines of the development of strong contingent voting stocks rather than of full voting issues. Tho doubtless most desirable as an adjunct to otherwise full voting shares, it is still arguable that strong contingent voting rights attached to stocks with otherwise limited voting control, or even substantially non-voting, are better adapted to securing the proper management of the corporation and the adequate protection of shareholders than other forms of issue.

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PARTIAL ELASTICITY OF DEMAND

SUMMARY

Elasticity of demand and flexibility of prices, 394. — Equations to simple demand curves, 395. — Partial flexibility of prices, and partial elasticity of demand, 396. — Equations to demand functions revealing the partial elasticities and partial flexibilities, 398. — Conclusions, 400.

IN the development of the deductive theory of economic equilibrium a distinction has been drawn between particular equilibria and general equilibria. The theory of particular equilibria has been concerned with demand and supply relating to single commodities, and the functions descriptive of both demand and supply have been regarded as functions of one variable. Marshall's *Principles* and Auspitz and Lieben's *Untersuchungen* are, for the most part, studies of particular equilibria. The theory of general equilibria has described the conditions of a state of rest in the economic system as a whole, and the functions descriptive of demand and supply of single commodities have been assumed to be functions either of the prices or of the quantities of all commodities. The treatises of Walras and Pareto are devoted primarily to investigations of this type of equilibria.

Recent statistical studies of the laws of supply and demand of single commodities not only have described methods by means of which the theory of particular equilibria may be given a concrete statistical form, but have so stated the laws of demand and supply as to connect them, respectively, with the theory of elasticity of demand and the laws of cost. The chief difficulty in the way of extending the realistic treat-

ment and of making the transition from particular equilibria to general equilibria is the necessity, in case of the more complex inquiry, of working with functions of many variables. Is it not probable that help toward overcoming this difficulty may be obtained by extending the theories which facilitated the solution of the simpler problem of particular equilibria? Is it possible to supplement the theory of elasticity of demand with a theory of partial elasticity of demand?

ELASTICITY OF DEMAND AND FLEXIBILITY OF PRICES

The quantitative treatment of the conception that lies at the basis of elasticity of demand originated with Cournot.¹ Professor Marshall gave the conception a name and simplified and extended its presentation.

If η be taken as the symbol to represent elasticity of demand and if y = the price per unit of commodity and x = the quantity of commodity demanded at price y , then the definition of elasticity may be given as

$$\eta = \frac{dx}{x} \bigg/ \frac{dy}{y} = \frac{y}{x} \cdot \frac{dx}{dy} \dots \dots (1).$$

In this definition the negative sign used by Professor Marshall has been purposely omitted. The demand for a commodity is said to be elastic when η is numerically² greater than unity, and the demand is said to be inelastic when η is numerically less than unity.

In the symbolic definition (1), η is regarded as the ratio of the relative change in the quantity of commodity demanded to the relative change in the price

1. "Elasticity of Demand and Flexibility of Prices," Journal of the American Statistical Association, March, 1922.

2. I regret my failure to insert the word *numerically* in the article on "Elasticity of Demand and Flexibility of Prices," in the Journal of the American Statistical Association, March, 1922. The omission must have caused confusion to readers of the article.

per unit of commodity. Quite obviously one could have defined equally well a quantity ϕ , which would be the ratio of the relative change of the price per unit of commodity to the relative change in the quantity of commodity. The latter conception could be called flexibility of prices ³ and would be described as

$$\phi = \frac{dy}{y} \bigg/ \frac{dx}{x} = \frac{x}{y} \cdot \frac{dy}{dx} \dots \dots \dots (2).$$

EQUATIONS TO SIMPLE DEMAND CURVES

There are several ways ⁴ in which demand curves may be derived, but in the subsequent reasoning use will be made only of the method of trend-ratios.

In preparing the data of prices and quantities of commodities so that they may be used to deduce the law of demand by the method of trend-ratios, the prices of the commodity at successive points in time are expressed as ratios to the corresponding trends at the respective points in time. Similarly the quantities of commodity at the points in time are expressed as ratios to the corresponding commodity trends.

Useful types of curves for connecting the price-trend-ratios with the commodity-trend-ratios may be derived by integrating the equations obtained by putting either

$$\left. \begin{aligned} \phi &= a \\ \phi &= a_0 + a_1x \\ \phi &= a_0 + a_1x + a_2x^2 \end{aligned} \right\} \quad \text{or} \quad \left\{ \begin{aligned} \eta &= \beta \\ \eta &= \beta_0 + \beta_1y \\ \eta &= \beta_0 + \beta_1y + \beta_2y^2 \end{aligned} \right.$$

3. In treating η and ϕ statistically, it is best to derive η from the hypothesis that price is the independent variable, and to derive ϕ from the hypothesis that the independent variable is quantity of commodity. It is not wise to assume, as I assumed in "Elasticity of Demand and Flexibility of Prices," *Journal of American Statistical Association*, March, 1922, that when ϕ is determined from the statistics, η may be inferred from $\eta = \frac{1}{\phi}$.

4. Henry Schultz: "The Statistical Law of Demand," *Journal of Political Economy*, October and December, 1925.

Obviously it is wise to go forward in the direction in which definite conclusions have already been attained. Progress in the treatment of elasticity of demand has been made (a) by using the method of trend-ratios in the preparation of the statistical data, and (b) by deriving appropriate demand curves from one of the hypotheses.

$$\begin{aligned}\eta &= \beta \\ \eta &= \beta_0 + \beta_1 y \\ \eta &= \beta_0 + \beta_1 y + \beta_2 y^2\end{aligned}$$

For making a first approximation, the simplest assumption, namely, that $\eta = \beta$, leads to the conclusion that a useful form of demand curve is

$$x = \beta y^\beta,$$

or, in the logarithmic form,

$$\log x = \log B + \beta \log y.$$

The suggestions from this experience that occur with reference to the problem of the general form to give to

$$x_p = f_p(y_1, y_2, \dots, y_n)$$

are (a) to retain the method of trend-ratios in the preparation of the data, and (b) to make a first approximation to the values of the partial elasticities by taking a form of equation that will give the several partial elasticities as constants. The appropriate type for x_p will therefore be

$$\begin{aligned}\log x_p &= \log B + \beta_{p1} \log y_1 + \dots \\ &+ \beta_{pn} \log y_n \dots (11).\end{aligned}$$

Equation (11) clearly satisfies the imposed condition. For, according to (10),

$$\begin{aligned}\eta_{p1} \dots \eta_{pn} &= \frac{y_1}{x_p} \cdot \frac{\partial x_p}{\partial y_1}, \text{ and according to (11), } \frac{1}{x_p} \cdot \frac{\partial x_p}{\partial y_1} = \\ &= \frac{\beta_{p1}}{y_1}.\end{aligned}$$

Substitute this value of $\frac{\partial x_p}{\partial y_1}$ in the above value of $\eta_{p1.23\dots}$ and we get

$$\eta_{p1.23\dots n} = \beta_{p1.23\dots n}.$$

In a similar manner

$$\begin{aligned}\eta_{p2.13\dots n} &= \beta_{p2.13\dots n} \\ &\dots\dots\dots \\ \eta_{pq.12\dots (q-1)(q+1)\dots n} &= \beta_{pq.12\dots (q-1)(q+1)\dots n} \\ &\dots\dots\dots \\ \eta_{pn.12\dots (n-1)} &= \beta_{pn.12\dots (n-1)}.\end{aligned}$$

If it is desired to have the partial flexibilities of prices, they may be derived by means of the typical equation

$$\begin{aligned}\log y_p &= \log A + \alpha_{p1.23\dots n} \log x_1 + \dots \\ &+ \alpha_{pn.12\dots (n-1)} \log x_n \dots (12).\end{aligned}$$

The determination of the constants in the general demand functions (11), (12) may be carried out directly by the method of least squares, or, less directly, by the method that has been made so familiar in the theory of partial correlation. Since equations (11), (12) are linear equations of the logarithms, the α -coefficients and the β -coefficients are simply the regressions in logarithmic regression equations, and their values may be computed from the appropriate coefficients of correlation and standard deviations.

CONCLUSIONS

- (1) A theory of partial elasticity of demand is developed.
- (2) The theory of partial elasticity of demand sug-

gests a typical equation for the general demand function.

(3) The constants in the general demand function may be statistically determined.

(4) The concrete derivation of the general demand function gives hope of the possibility of passing from a concrete treatment of particular equilibria to a concrete treatment of general equilibria.

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TOWARD AN UNDERSTANDING OF THE METROPOLIS

II. THE ASSIGNMENT OF ACTIVITIES TO AREAS IN URBAN REGIONS

SUMMARY

Where do things "belong" in an urban area? 404. — Inadequacy of current analysis, 404. — Study of location trends in New York as a method of attacking the problem, 406. — Summary of trends in location of manufacturing and other economic activities, 407. — Complications caused by fluctuations in prosperity of groups studied, 414. — Advantages of discussing problem in terms of functions, 417. — Cohesion of functions, 417. — The problem of rating the functions, 419. — Accessibility and the costs of friction, 420. — Layout determined by the minimizing of the costs of friction; an hypothesis, 422. — The hypothesis explained and tested, 423. — Distorting and retarding factors, 429. — Primary and ancillary activities, 430. — The economic basis of zoning, 431.

In the preceding paper¹ dealing with the factors affecting the general "pattern" of population distribution, it was suggested that the urban areas are apparently the most economical points at which to supply people with the varied assortments of goods and services in effective demand at the present state of the world's development; that, assuming a given state of the arts and a given distribution of natural resources, the relative importance of rival urban areas is determined fundamentally by relative transportation advantages; and that the entire "foot-free" population (all persons not required to man the natural resources, the "porta-

1. *Quarterly Journal of Economics*, February, 1926, pp. 179-208.

bility-producing" industries, the "supplementary" industries, the transportation system, and the necessary services to supply such persons with their consumption assortments) is tending to locate in urban areas. Attention will now be directed to the urban areas themselves. What are the forces that determine the several uses of urban land?

At first glance, land utilization in an urban area such as New York and its environs appears to be without rhyme or reason, a confused and baffling welter of anomalies and paradoxes. The land is being used, most of it, very intensively indeed. Nine million people eat and sleep, work and play in the area. But the assignment of the land to the various uses seems to the superficial observer to have been made by the Mad Hatter at Alice's tea party. Some of the poorest people live in conveniently located slums on high-priced land. On patrician Fifth Avenue, Tiffany and Woolworth, cheek by jowl, offer jewels and jimcracks from substantially identical sites. Childs restaurants thrive and multiply where Delmonico's withered and died. A stone's throw from the stock exchange, the air is filled with the aroma of roasting coffee; a few hundred feet from Times Square, with the stench of slaughter-houses. In the very heart of this "commercial" city, on Manhattan Island south of 59th Street, the inspectors in 1922 found nearly 420,000 workers employed in factories. Such a situation outrages one's sense of order. Everything seems misplaced. One yearns to rearrange the hodgepodge and to put things where they belong. The confusion, of course, is more apparent than real. The deeper one delves into the reasons underlying the present layout, the more distrustful he becomes of sweeping indictments of its soundness and efficiency. Most of the apparent anomalies and paradoxes dissolve into com-

monplaces when subjected to serious study and detailed examination.

Where do things "belong" in an urban area? What is the test of the fitness of an activity to occupy a given part of the area? By what standard can an activity be said to be misplaced? Is there a perfect economic design or pattern of layout which the planner should strive to approximate? Is it possible to construct a defensible order of precedence among the activities clamoring for space? Is there a valid distinction between "primary" and "ancillary" activities? On what basis can the conflict of claims be reconciled? Is there a scientific foundation for the exercise of collective control through zoning? These are questions which are troubling the more thoughtful leaders in the city-planning movement.

True it is that answers to these questions and, in general, an understanding of the principles which determine the assignment of activities to areas in urban centers, are essential if city planning is to proceed intelligently. "One of the most stupendous dreams of the social control of civilization concerns the remaking of cities," says Douglas.² "It is proposed to decentralize them deliberately. By removing obstacles, or interposing deflecting factors, the decentralization which is actually going on may be guided, accelerated and focussed. This is the meaning of modern city planning. In the process of deliberate decentralization, science is ultimately to decide what elements in the present city ought to remain and what ought to go."

Unfortunately one finds little in the literature of social science upon which to base a definite prescription as to what functions should be decentralized. The sociologists, it is true, have recently begun to discuss what they

2. *The Suburban Trend*, pp. 272-274.

call the "ecology" ³ of the city, but their analysis has not yet proceeded to the point where it can offer a substantial contribution to the solution of this particular problem.⁴ And when one turns to the economists, it appears that surprisingly little attention has been given to the problem. In the standard texts, urban site rent is commonly dismissed with a brief observation regarding its resemblance or lack of resemblance to the rent of agricultural land. Professor Taussig ⁵ is one of the few writers who has made a real effort to shed light upon this problem. In a separate chapter devoted to the topic, he points out that urban rent "results from the differential advantages of certain plots." "The application of capital and labor on some sites yields greater returns than on others," and "the possibilities of production on the better sites are limited." However, in discussing "the cause and the extent of the differential advantages of urban land," he is forced to content himself with suggesting, in a few examples, what the cause may be. There is little consideration as to precisely what it is about one type of use which enables it to out-

3. They point out that "the city has an internal organization which may be termed an ecological organization, by which we mean the spatial distribution of population and institutions and the temporal sequence of structure and function following from the operation of selective, distributive, and competitive forces tending to produce typical results wherever they are at work." Park and Burgess, *The City*, p. 187.

4. They assert that "in the process of community growth there is a development from the simple to the complex, from the general to the specialized; first to increasing centralization and later to a decentralization process." *Ibid.*, p. 73. "There is a struggle among utilities for the vantage points of position. . . . As competition for advantageous sites becomes keener with the growth of population, the first and economically weaker types of utilities are forced out to less accessible and lower-priced areas." *Ibid.*, p. 74. But what are these "economically weaker" types and precisely wherein does the weakness consist? They observe further that "land values are the chief determining influence in the segregation of local areas and in the determination of the uses to which an area is to be put." *Ibid.*, p. 203. But is it not the uses which determine the land values rather than *vice versa*?

5. *Principles of Economics*, Revised Edition, ii, 77.

bid another type of use for the privilege of utilizing a choice site. Professor Ely, in his recent series of monographs on "land economics," contributes the following toward a solution: "The 'center of the city' is merely the point of greatest concentration of people in a market. The size of this market depends upon the population of the city and upon its wealth. To be situated at the center of this market is to occupy the most advantageous place, hence men will bid high for the ownership or the privilege of occupying this favored space."⁶ He quotes the following sentence from Thünen: "If we investigate the reasons why the site rent increases steadily toward the center of the city, we shall find it in the labor saving, the greater convenience and the reduction of the loss of time in connection with the pursuit of business."⁷ This is very suggestive, but falls far short of supplying a scientific guide for a policy of deliberate decentralization. All can agree with Professor Ely's observation that "perhaps no one has sufficiently developed the law of urban rent."

The interests at stake in decentralizing cities are sufficiently great to justify considerable effort to learn where, in a soundly-conceived economic plan, things "belong." The committee on the Regional Plan of New York decided to attack the problem in a realistic manner by making a series of studies of trends and tendencies in the location of the chief economic activities in the area. It was hoped that, by observing what is actually happening in the competitive struggle for urban sites, it might be possible to glimpse the outlines of an economically ideal pattern or plan; that, by examining what was being crowded out of the choice central locations and

6. *Characteristics and Classification of Land*, p. 143.

7. *Der isolierte Staat*, pp. 212-213.

what was doing the crowding, it might be possible to infer where "things belonged."

The results of these studies of trends and tendencies in urban land utilization are too voluminous to be presented here.⁸ However, some of the aggregate figures are shown in the table on page 409, and some of the general conclusions will be briefly summarized. In this article, however, the primary purpose is not to exhibit the evidence in detail, but to outline and submit for criticism certain tentative hypotheses regarding the assignment of activities to areas in urban areas which have been suggested by these special studies. For most of the supporting data the reader must be referred to the published monographs.

In some respects New York is a peculiarly good place to study the problem outlined above. Its size and complexity, which at first glance appear to be such serious obstacles, prove upon examination to carry with them great advantages. The magnitude of the metropolis not only minimizes the influence of "sport" cases, but it also operates, like a Bunsen flame under a test-tube, to produce phenomena which do not become explicit in small places where the pressure for space is not great. Again, the complexity of New York implies a wide range and a high degree of segregation of economic activities, and consequently an opportunity to observe and to distinguish among many rather than a few economic functions struggling for the more convenient locations.

When the city planners speak of decentralization, they usually have prominently in mind the decentralization of factories. Manufacturing seems to them one thing which certainly does not "belong" in the center of

8. The studies are being published in a series of monographs by the Regional Plan of New York, 130 East 22d Street, New York City. In this paper, citations of these studies are made to the number of the monograph in the Economic Series.

the metropolis. Consequently it is interesting to examine the figures in the table on page 409 to see how far decentralization of factories is taking place under the lash of the competition for space. Zone I, Manhattan south of 59th Street, consists roughly of the southern third of the island, the heart of the city. The other two zones, together, stretch approximately to the commuting limits of the metropolis.⁹

In the first place, while many more people worked in factories in the center of the city in 1922 than in 1900, fewer worked there than in 1917.¹ The rate of increase in the center, when one compares 1900 with 1922, was 44.8 per cent. For the rest of New York and its environs the increase was 114 per cent. The population of the entire area increased, between 1900 and 1920, 66.8 per cent. These figures appear to furnish grounds for the belief that the peak of manufacturing in the center of the city was reached about ten years ago and that a process of decentralization is already under way.

When the figures are broken into the ten industrial groups shown in the table on page 409, other significant facts emerge. Thus, between 1900 and 1912, the wood-products group was the only group in Zone I which actually declined in numbers. Between 1912 and 1917, metals, textiles, and tobacco also went into decline. Between 1917 and 1922, the textiles group gained slightly; but the chemical, the men's and women's clothing, and the food groups joined the ranks of those that were losing their hold in the center of the city. Printing is the only group showing a consistent record of gain in the central zone throughout the twenty-two-year period.

9. For maps showing the precise boundaries of the zones, see the published monographs of the Economic Series.

1. This decline is not to be attributed to the business depression of 1922, as appears to be shown by the fact that between 1917 and 1922 the region as a whole gained materially in number of factory employees.

TABLE I

EMPLOYEES OF INSPECTED FACTORIES CLASSIFIED BY INDUSTRIES AND BY ZONES IN NEW YORK AND ITS ENVIRONS IN 1900, 1912, 1917, AND 1922, WITH PER CENT OF INCREASE OF 1922 OVER 1900*

Industry	Number of employees				Per cent in- crease 1922 over 1900
	1900	1912	1917	1922	
ZONE I — MANHATTAN SOUTH OF 59TH STREET					
Chemicals.....	5,400	6,262	7,775	7,523	39.3
Men's clothing.....	35,471	63,189	70,119	52,670	48.5
Women's clothing ...	59,181	112,756	128,108	114,061	92.7
Metals.....	37,623	44,940	42,870	42,065	11.8
Printing.....	35,946	50,648	52,868	53,873	49.9
Food.....	22,361	25,393	27,457	24,197	8.2
Textiles.....	9,774	11,437	10,325	11,417	16.8
Wood.....	21,701	20,774	17,058	14,872	-31.6
Tobacco.....	10,515	11,740	6,658	5,423	-48.4
All others.....	51,931	62,996	97,225	93,683	80.4
Total.....	289,903	410,135	460,463	419,784	44.8
ZONE II — TWENTY-MILE INDUSTRIAL ZONE					
Chemicals.....	21,336	36,560	38,914	56,882	166.6
Men's clothing.....	10,045	37,024	36,516	43,110	329.2
Women's clothing ...	6,911	20,510	26,364	28,210	308.2
Metals.....	89,200	147,973	164,161	182,814	104.9
Printing.....	5,374	9,871	13,233	16,601	208.9
Food.....	23,201 †	39,553	38,516	53,177	129.2 †
Textiles.....	55,255	87,520	82,940	96,420	74.5
Wood.....	18,804	40,731	31,280	36,393	93.5
Tobacco.....	12,319	17,595	13,147	10,946	61.9
All others.....	59,301	106,255	94,488	128,407	116.5
Total.....	301,746	543,592	539,559	661,960	119.4
ZONE III — OUTLYING AREA					
Chemicals.....	1,284	2,185	15,723	6,096	374.8
Men's clothing.....	4,580	7,015	8,545	12,119	164.6
Women's clothing ...	4,220	3,931	7,662	7,924	87.8
Metals.....	23,638	36,177	63,881	44,200	87.0
Printing.....	983	1,738	2,132	2,870	191.4
Food.....	2,760 †	2,586	3,899	5,098	84.7 †
Textiles.....	8,380	11,672	12,944	15,924	90.0
Wood.....	2,494	2,460	2,773	4,298	72.3
Tobacco.....	1,005	1,010	1,486	1,126	12.0
All others.....	15,994	35,737	24,593	24,724	54.6
Total.....	65,338	104,520	143,637	124,379	90.3

* The total figures for all three zones will be found in the table on page 190, Quarterly Journal of Economics, February, 1928.

† A comparison of the factory inspection figures for New Jersey in 1900 with fragmentary figures from the census indicates that perhaps as many as 2000 workers in food plants were omitted from Zone II, and as many as 600 from Zone III.

As the result of these developments, the industrial complexion of the center of the city has changed. In 1900 a representative group of 100 factory hands employed in the center of the city would have contained 33 clothing workers; in 1912 and in 1917 the group would have contained 43 clothing workers, and in 1922, 40.²

Moreover, in spite of their relative strength in the center of the city, both the men's and the women's clothing groups have grown more rapidly in Zone II than in Zone I. As a result, while approximately two thirds of the men's-clothing workers were in the center in 1900, only one half were there in 1922. Even with women's clothing, in 1900 only about one seventh of the workers were employed outside the center, whereas in 1922 one fifth were outside.

These general figures seem to indicate, then, that, on the whole, manufacturing is certainly not more than holding its own in the center of the city and has probably already begun to be crowded out. Moreover, the figures give evidence of considerable variability in the degree of persistence with which the different industries cling to the choice central locations.

When the industries are broken still further into smaller sub-groups, as is done in the table on page 412 for the years 1900 and 1922 in the center of the city, it is found that the aggregate figures conceal marked variations in the growth and decay of branches of the various industries. While the aggregate figures for the printing industry, for example, show a strong and steady growth in Zone I, amounting to about 50 per cent in the 22 years, the more detailed figures for the sub-groups show

2. These include only those employees who are grouped under the heading of men's clothing and women's clothing. If the needle-workers included in the "all others" group were added, the 1922 figure of 40 becomes 56.

that photo-engraving quadrupled in this area, newspaper printing nearly trebled, book- and job-printing increased approximately the normal 50 per cent, lithography was practically static, and bookbinding declined 20 per cent. Again, while in the aggregate women's clothing about doubled in this central area, one branch, dresses and waists, trebled, and yet another branch, neckwear, lost more than half its employees. In the aggregate, the metal-products industry almost stood still in Zone I; but one branch, technical instruments, more than doubled, and another branch, heavy machinery, declined to less than half its former size. Equally striking statements can be made for practically all the other industries.

Turning from manufacturing to the other activities that are competing for choice central sites, serious difficulties are encountered because of scanty statistical data. The space-demands of housing may, however, be roughly gauged by using the census figures of population. In 1900, 1,149,226 people were reported as living south of 59th Street. This number increased to 1,252,893 in 1910, but dropped to 1,063,962 in 1920, a decline of 168,931. Moreover, it is the very poor who are abandoning the center as a place to live. A study of the 58 sanitary districts south of 14th Street show that, in the 27 districts which may fairly be classed as slums, there was a decrease in population between 1910 and 1920 of 158,632, a loss nearly large enough in itself to account for the entire population decline in Zone I.³ Apparently the well-to-do are not being crowded out; they may be doing some of the crowding.

3. From an unpublished study made by Miss Celia Lesser.

TABLE II

EMPLOYEES OF INSPECTED FACTORIES IN MANHATTAN SOUTH OF
59TH STREET CLASSIFIED BY BRANCHES OF INDUSTRY
IN 1900 AND 1922, WITH PER CENT INCREASE

	1900	1922	Per cent increase or decrease
Photo-engraving.....	447	2,202	392.6
Men's furnishings.....	1,103	5,133	365.4
Knit goods.....	779	2,827	262.9
Embroidery.....	3,365	11,494	241.6
Dresses and waists.....	16,302	50,598	210.4
Millinery.....	7,383	21,353	189.2
Newspaper printing.....	3,511	9,354	166.4
Soap and toilet preparations.....	1,371	3,484	154.1
Corsets.....	954	2,268	137.7
Technical instruments.....	5,438	11,772	116.5
Fur, leather, and rubber.....	15,667	30,963	97.6
Textile finishing.....	871	1,637	87.9
Children's wear.....	4,659	8,653	85.7
Textile small wares.....	2,616	4,574	74.8
Miscellaneous clothing.....	3,363	5,876	74.7
All others.....	2,750	4,722	71.7
Women's cloaks and suits.....	23,167	38,013	64.1
Men's clothing.....	24,776	38,568	55.7
Cigarettes and miscellaneous tobacco..	1,577	2,447	55.2
Book and job printing.....	19,742	30,324	53.6
Housedresses and kimonas.....	2,774	4,218	52.1
Light metal products, etc.....	10,872	15,937	46.6
Women's underwear.....	5,274	7,358	39.5
Paints, dyes, and inks.....	942	1,243	32.0
Paper and paper goods.....	9,206	11,505	25.0
Jewelry and precious metals.....	6,130	7,537	22.9
Miscellaneous wood products.....	2,025	2,453	21.1
Laundry, cleaning, and dyeing.....	3,535	4,177	18.2
Miscellaneous printing.....	3,670	4,136	12.7
Lithography.....	3,394	3,685	8.6
Food.....	22,361	24,197	8.2
Men's hats and caps.....	5,531	5,463	-1.2
Miscellaneous chemicals.....	749	707	-5.6
Pianos and other musical instruments..	3,645	3,406	-6.6
Fine chemicals.....	2,338	2,089	-10.7
Men's shirts.....	4,061	3,506	-13.7
Silk goods.....	1,511	1,274	-15.7
Bookbinding.....	5,182	4,172	-19.5
Furniture and cabinet work.....	9,072	6,290	-30.7
Stone products.....	5,305	3,211	-39.5
Pencils, pipes, and cork.....	2,127	1,244	-41.5
Women's neckwear.....	6,051	2,953	-51.2
Heavy machinery, etc.....	15,183	6,819	-55.1
Cigars.....	8,938	2,976	-66.7
Lumber and planing mill products....	4,465	1,427	-68.0
Power.....	1,357	382	-71.9
Miscellaneous textile products.....	3,997	1,105	-72.3
Cooperage.....	367	52	-85.8
	289,903	419,784	44.8

The following fragmentary information regarding marketing, financial, and professional activities in downtown New York may be considered in connection with the fact, mentioned above, that factory employees in Manhattan south of 59th Street increased approximately 45 per cent between 1900 and 1922.

The number of investment bankers (firms and individuals) in New York City increased from 204 in 1902 to 372 in 1922, or 58 per cent.⁴

The number of insurance brokers south of 59th Street increased from 3474 in 1912 to 6613 in 1923, or 90 per cent.⁵

The number of accounting firms south of 59th Street increased from 43 in 1900 to 726 in 1922, or 1588 per cent.⁶

The number of corporations listed in Moody's Manual as having offices in New York south of 59th Street increased from 69 in 1912 to 570 in 1922, or 726 per cent.

The number of custom brokers and forwarding agents south of Fulton Street increased from 110 in 1900 to 370 in 1922, or 236 per cent.⁷

The number of lawyers south of 59th Street increased from 6135 in 1900 to 12,769 in 1922, or 108 per cent.⁸

The floor space occupied by the large department stores⁹ south of 60th Street increased from 4,101,000 square feet in 1902 to 7,083,000 square feet in 1922, an increase of 73 per cent.¹ In 1912 the corresponding figure was 7,272,000 square feet, there being a marked decline between 1912 and 1916.

The number of middlemen (including commission

4. Williams and Company's Directory of Brokers.

5. Lists of Insurance Department of State of New York.

6. Trow's Business Directory and Donnelly's Red Book.

7. Custom-House Guide Book.

8. Bender's Legal Directory.

9. Those having a gross floor space of 25,000 square feet or more.

1. Real Estate Atlases of Manhattan.

merchants, converters, brokers, jobbers, selling agents, factors, New York buyers for out-of-town jobbers, New York sales offices of out-of-town manufacturers, etc.) in the wholesale cotton, silk, and knit-goods markets south of 59th Street increased from 733 in 1900 to 3924 in 1922, or 435 per cent.²

The number of jewelry jobbers and wholesalers south of 59th Street increased from 387 in 1900 to 1025 in 1923, or 165 per cent.³

Such data as these furnish a very rough and approximate answer to the questions what is being crowded out of the center of the city and what is doing the crowding. However, this answer, tho realistic in form and to some degree helpful in solving the practical problem of the planner, is cast in terms which do not greatly advance the search toward an understanding of the phenomena. It is only when inquiry is made regarding the detailed reasons for growth and decline of the various activities that the study begins to yield the stuff out of which an explanation can be constructed.

Several of the extreme cases are easily explained on the special ground of the fluctuating fortunes of the industry as a whole. Cooperage has almost disappeared as a down-town industry. But cooperage throughout the country is on the decline, the prohibition amendment and the scarcity of white oak being among the contributing causes.⁴ Again, photo-engraving, the most rapidly growing industry in the table on page 412 was in its technical swaddling-clothes in 1900, and has grown to manhood during the period under review, hand in

2. Davison's Directory.

3. List of National Jewelers, Board of Trade.

4. Cooperage, of course, also requires large space. See Mills, *Economic Series*, Monograph Number Four, p. 45.

hand with the art of photography. The high rate in the growth of toilet preparations is traceable in large part to the success which has recently crowned the struggle of the lip-stick for respectability. Further, the gain of one branch of an industry is sometimes at the expense of another branch. The popularity of cigarettes has retarded growth in the manufacture of cigars. The high rate of growth of the dress industry is partly the cause of the relatively low rate of growth of the cloak and suit industry. In other words, the rate of growth or decline in the center of the city is not a sure indication of the degree of fitness of a particular industry to compete for choice sites. Men's hats and caps, an old industry whose rate of growth was practically zero, may "belong" in the center quite as much as "knitted outerwear," a new industry, which grew nearly four-fold.

When one begins to seek the reasons for growth and decline in the center, he is immediately impressed by the inadequacy of the terminology ordinarily used in discussing the problem. Broad terms such as "industry," "manufacture," "commerce," and "trade" are not well adapted to the task in hand. If, for example, a silk mill, formerly located on Manhattan, moves to Pennsylvania but keeps its head office and salesroom in New York, it is not accurate to say that this "industry" has left New York. What has actually happened is that there has been a territorial subdivision of functions which were formerly united in the same place, certain activities being sent to Pennsylvania and certain others kept in the metropolis. Fabrication and certain other functions have gone, but selling and many of the other functions remain. Fourth Avenue is full of establishments bearing the names of manufacturing plants, but no fabrication is in evidence. Tho it is the center of the silk industry, not a loom is to be found there. Nor is the

situation changed fundamentally if the establishment, instead of retaining its New York office, delegates its selling to a jobber or agent operating in New York under his own name. The significant thing is the amount and the character of the activity which leaves, and the amount and the character of the activity which remains. If a Fifth Avenue merchant sends his buyer to open an office in Paris, transfers his reserve stocks to a warehouse on the water-front, and places his alteration shop in Long Island City, it is misleading to say merely that the "merchant" is located on Fifth Avenue. He has scattered his activities to many places. If the fact that his sign still graces the Avenue is accepted as the sole test of his location, significant facts will be entirely overlooked. Every business is a packet of functions, and within limits these functions can be separated and located at different places.

The pressure for space in the center of New York has stimulated a great deal of relocation of functions which is difficult to catch in any statistical net. A Fifth Avenue merchant testifies that he has found it profitable in recent years to rent extensive accommodations in bonded warehouses instead of storing his imported goods in his own establishment, as was formerly his practice. Many Wall Street lawyers, finding their office space too expensive at four dollars per square foot to use for storage purposes, have sent their old files to Brooklyn, where special facilities have been established to perform this function at relatively low cost. The New York Telephone Company has tried the plan of reducing its commercial offices to mere counter-space and sending its clerical staff to low-rent quarters. A large silk manufacturer, who now uses most of his large building on Fourth Avenue as a stock-room, states that upon the completion of the new vehicular tunnel

his New York building will become strictly a sample-room and his stock-room will be in New Jersey. Even in Newark, one of New York's Jersey satellites, the pressure for space in the shopping center has caused one large department store to establish a "service station" on cheap land, where the orders are assembled and the deliveries routed.

The extent to which a business may with profit separate physically certain of its functions from the others varies greatly. In some cases the packet of functions is loosely tied and in others is tied tightly. Obviously the difficulties of coördination and control increase as the disintegration progresses. The scale of the business is a factor of importance in this connection. In a very small business the option of moving part of the functions simply may not exist. It may be a case of moving all or none. A little cigar factory may market its entire output over a small counter in the front of the room and fabricate it with a force of a half-dozen workers in the rear. The proprietor in such a case supervises the entire process and does much of the work. He buys the materials, "bosses" the men, makes cigars, and conducts the sales. To separate the functions of fabrication and selling in such a case would increase the costs of management more than would be saved by using the back of the store for some other purpose than for the making of cigars. The little factory must, therefore, stand or fall in competition with the big factory, which can separate its functions at a smaller increase in costs of management, on the basis of some special advantage. In most cases this advantage is found in specializing the product so as to meet the demands of a particular clientele. Perhaps the persistence with which clothing fabrication clings to Manhattan is to be partly explained by the

fact that the small size of the shop prevents the physical separation of functions. There is a tendency, then, finding its root in increased costs of management, to resist the separation of functions which derive advantages from close physical proximity. But as, in a game of chess, a pawn is sacrificed to gain a king, management costs are increased when by so doing site rentals can be decreased by a larger amount.

Certain advantages also flow from a cohesion of functions in a given district, and the result is a number of specialized centers with definite unities of interest rather than a single diversified center. The efficiency of the financial district would be materially lessened if it were scattered over a wider area, as it would necessarily be if it were mixed up with the shopping center. The shopper gains real advantages from a consolidated area of shops. Broadly speaking, the financial district contains only such shops as minister to the immediate convenience of the workers in that district. The students at Columbia University do not go to Wall Street to buy their hats or their cigarettes. In the shopping districts, on the other hand, are found only such banks and brokers' offices as minister to the immediate convenience of the shops and their customers. The same factor operates to bring the wholesale silk houses into a fairly well-defined cluster. With factories also there are often material advantages in placing like with like.

Thinking of the economic activities, then, as packets of functions, it becomes a matter of interest to inquire regarding the advantages which accrue from performing groups of functions in the center of the urban area. The competition for space is a competition among these packets; but, since the constituent functions in the packets are constantly shuffled and the packets themselves

constantly moved about, there is a possibility that prolonged observation and study may eventually yield an order of precedence among the functions themselves with respect to their ability to utilize choice urban sites economically. In other words, the answer to the question where things belong in an urban area seems most likely to be found, if it is ever found in a realistic and usable form, through an analysis of the business and a weighting of the functions according to their position in a scale of precedence. When the city planner of the future is asked whether a button factory belongs on Fifth Avenue, it may be possible to reply somewhat as follows: "This activity consists of 70 per cent fabrication, 15 per cent storage, 10 per cent price establishment, and 5 per cent miscellaneous functions, giving it a rating of 2.7⁵ points. Land on Fifth Avenue of this degree of accessibility may not be utilized economically by any activity with a rating of less than 9.3. The proper location for activities rating from 2.6 to 2.8 is in Zone Q. The button factory should locate, say, in Rahway, New Jersey, or in Stamford, Connecticut." If this be fantastic, the notion that "in the process of deliberate decentralization, science is ultimately to decide what elements in the present city ought to remain and what ought to go" is also fantastic. At the present time the button factory, perhaps after several trials and errors, goes to the outskirts because it cannot pay the downtown rents. The formula of the future, if sound, will send the factory out for the same reason. Not so simply, but perhaps with fewer trials and errors, it will show what activities can and what cannot pay down-town rents. It will supply a scientific basis for zoning.

The construction of a weighted scale and a precise

5. The figure of 2.7 is, of course, purely arbitrary. The suggestion of *weighted functions* should not be confused with the plan of *weighted factors* used by many engineers in analyzing location problems.

order of precedence for functions is a task for the distant future. A study of the available data, however, yields a number of interesting clues which, if followed up, may lead to a more complete understanding of "the cause and extent of the differential advantages of urban land." A study of the functions performed by those activities which thrive and those which die in the urban center should show why "the application of capital and labor on some sites yields greater returns than on others."⁶

Ignore, for the time being, the physical conformation of the area and the unevenness of its present equipment of transportation facilities. One then has a circular plane whose center is, of course, the point most easily reached from all the points within its circumference. The essential quality which the center possesses is physical proximity, or accessibility, to all parts of the area. Obviously all activities with concentric circles of influence coinciding with this center will find the center most convenient as a location. If physical relationship to the surrounding territory is of any importance at all, all such activities would prefer, in the absence of obstructing forces, to be located at the center. But these activities differ in the degree to which they can make effective use of the quality of physical proximity or accessibility possessed by the center — that is, in the degree that they can turn accessibility into profits.⁷ An order of precedence of activities is worked out by competitive bidding, the relative size of the bids being determined fundamentally by the degree to which the various activities can profitably utilize sites.

The term accessibility, as used in the preceding para-

6. See page 405.

7. The term profits is here used to include site rent.

graph, really means ease of contact — contact with relatively little friction. The friction of space may be overcome by means of transportation; but transportation involves costs. Rent appears as the charge which the owner of a relatively accessible site can impose because of the saving in transportation costs which the use of his site makes possible. The activities which can "stand" high rents are those in which large savings in transportation costs may be realized by locating on central sites where accessibility is great. The complementary character of these two things — site rents and transportation costs — is imperfectly recognized, and in view of its vital relationship to sound regional planning, deserves elaboration.

Transportation is in essence a method of overcoming the friction of space, and so long as transportation is imperfect (and it can never become instantaneous or effortless), the movement of people, goods, or intelligence from one spot to another spot on the earth's surface is a costly process. The center is the point at which transportation costs can be reduced to a minimum. Since there is insufficient space at the center to accommodate all the activities which would derive advantages from location there, the most central sites are assigned, for a rental, to those activities which can best utilize the advantages, and the others take the less accessible locations. Site rents and transportation costs are vitally connected through their relationship to the friction of space. Transportation is the means of reducing that friction, at the cost of time and money. Site rentals are charges which can be made for sites where accessibility may be had with comparatively low transportation costs. While transportation overcomes friction, site rentals plus transportation costs represent the social cost of what friction remains. Obviously an improve-

ment in transportation, other things remaining the same, will mean a reduction in friction and, consequently, the diminution of the aggregate sum of site rentals. The two elements, transportation costs and site rentals, are thus seen to be complementary. Together they may be termed the "costs of friction."⁸

It is these costs of friction which the city planner must seek to reduce to the lowest possible level. Of two cities, otherwise alike, the better planned, from the economic point of view, is the one in which the costs of friction are less. This will mean that the aggregate site rents are less or that the transportation system is superior — or both. It may be suggested as an hypothesis that the layout of a metropolis — the assignment of activities to areas — tends to be determined by a principle which may be termed the minimizing of the costs of friction.

An economic activity in seeking a location finds that, as it approaches the center, site rents increase and transportation costs decline. As it retreats from the center, site rents decline and transportation costs increase.⁹

8. The considerations stated above suggest the possibility of stating in general terms the sound limit of expenditure for transportation facilities in any community. Such expenditure for transportation facilities should proceed to the point where the cost of further improvement will be greater than the time and money saved by the improvement. That is, in the case of a rapid-transit installation, for example, the cost of the improvement should not exceed the value of the time saved the passengers plus the reductions in fares plus the reductions in rents, which would accrue as the result of the improvement. The implications of this principle for the financing of improvements are important. That changes in transportation facilities affect site rentals and land values has long been recognized. But the use of transportation to reduce the site rentals of a community is a somewhat novel conception. The assessment of costs of rapid transit against property owners clearly involves careful discrimination to determine true beneficiaries.

9. In the field of periodical printing, for example, two concerns which sent their printing away from down-town New York report that "railroad fares, express, freight, telephone, telegraph, and hotel expenses all show heavy increase." Hinrichs, *Economic Series, Monograph Number Six*, p. 31.

The sum of the two items, the costs of friction, is not constant, however. On the contrary, it varies with the site. The theoretically perfect site for the activity is that which furnishes the desired degree of accessibility at the lowest costs of friction.

If the economic activity seeking a site happens to be housing, is not the problem worked out in this fashion? In choosing a residence purely as a consumption proposition, one buys accessibility precisely as one buys clothes or food. He considers how much he wants the contacts furnished by the central location, weighing the "costs of friction" involved — the various possible combinations of site rent, time value, and transportation costs; he compares this want with his other desires and his resources, and he fits it into his scale of consumption, and buys. When, as is usually the case, the choice of a residence is not merely a consumption problem but a production problem as well, is it not probable that, to the extent that added accessibility is required for business purposes, the business pays the cost? The negro chauffeur in Harlem often pays a rent which would stagger a small-town banker in the middle west.

If the economic activity seeking a site is a factory in one of the sub-groups shown in the table on page 409, the question is again fundamentally one of minimizing the costs of friction: will a central location save more than it costs?

It is now possible to make some observations regarding the varying tenacity with which these factories cling to the central locations. Does not this tenacity vary directly in proportion to the advantages, in reduced costs of friction, derived from location on the more accessible sites? It may be granted that, in these packets of functions, fabrication is an important element, and that in the struggle for sites fabrication itself ranks very

low in competitive power. In the clothing trades, for example, the mere change in the form of the wool from a bolt of cloth into a suit of clothes is neither facilitated nor retarded by the fact that the fabrication is accomplished in the center of New York rather than in some remote village. The fact remains, nevertheless, that in the packet there are other functions, such as that of assembly. For example, in this fluctuating seasonal industry large numbers of workers must be gathered daily to the factory and returned to their homes. With the present radial system of transportation in New York, the performance of this function is greatly facilitated by a central location. Other functions in the packet of this "style" industry are price establishment, and selling on the basis of a comparison of varieties and qualities, for which a central location is highly important. Moreover, space can be very intensively used by this industry. It is estimated that a modern twelve-story loft building may contain one clothing worker for every 120 square inches of land area! Finally, with a high degree of cohesion of functions, traceable not only to the small scale of many of the establishments but also to the desirability of protecting styles from "piracy," the tenacity shown by the clothing trades is understandable. Ten of the twenty-two groups¹ that show a higher rate of growth than the average are clothing groups.

A functional analysis of the various branches of the printing industry may serve to test the principle still further. It has already been suggested that the extremely high rate of growth in photo-engraving may be explained, in part at least, by the fact that it is a new industry. But it is also a service industry; that is, its product is used by the printers, and convenient access to the printers is of great importance. The time which is

1. See table, p. 412.

saved by its being in a readily accessible location is worth the cost. Newspaper printing, another branch of the printing industry with a high rate of growth in Zone I, occupies the most expensive land of any of the branches. It clings to choice central locations because, for at least one of its functions, time is all-important. The printing process itself does not gain by being performed on a high-priced site. But a central location is convenient from the point of view of the assembly of the news. Moreover, there must be the closest possible contact between the copy desk and the mechanical departments. Finally, and perhaps most important, the papers must be made available to the readers with the least possible loss of time. Time saved is also the explanation for the persistence of job printing in the center. The work that can wait tends to go to outside shops. Work that is "rush" is done down-town. In periodical printing also there is a direct correlation between central location and the time-limits within which the work must be done. In a sample of twenty-two periodicals, edited in New York, with a margin of four days or less between the time of closing the last form and release, eighteen were printed in Manhattan itself and only two were printed on sites more than two hours distant from Manhattan. As the time-margin increases, the per cent printed outside increases. In the case of bookbinding, where time is less important, the trade is rapidly abandoning central locations. In the printing industry, then, fabrication by itself ranks low in competitive power to command choice sites, but the other functions tied up in the printing packet rank high.

A similar analysis of the other industries would merely reinforce the explanation outlined in the cases of clothing and printing. Fabrication as a function by itself gains nothing from being located on high-priced land.

But in the industrial packet there are other functions in varying proportions, which do gain materially because of the contacts afforded by the central sites. The industries that are leaving Manhattan are those in whose packets these other functions are relatively unimportant.

Illustrations already given suggest that storage may deserve classification with fabrication, as a function with little capacity to utilize effectively the contacts offered by central locations. In the packets of functions performed by most merchandising establishments, both wholesale and retail, storage plays an important rôle. A detailed study of twenty wholesale markets in New York City reveals a distinct tendency to scatter throughout the area, rather than to cluster in the center, on the part of merchants who, like wholesalers of groceries and meat, have a serious problem of storage, because of the bulky character of the products handled. If, however, the function of price establishment is present to an important extent, as in the case of the fruit and produce markets, they tend to remain clustered in the center. Warehouses offering space to rent were formerly grouped for the most part in a belt along the Manhattan waterfront. The new warehouses now being built are largely in a new belt along the shore line opposite Manhattan.

The highest land values in the city are in the Wall Street and the 42d Street sections. The Wall Street district, filled with high buildings, is dedicated to "finance." The 42d Street section is primarily a retail merchandising section, altho it has recently developed considerable importance as a miscellaneous office center. "Finance," as here used, includes the exchanges, the banks, the insurance offices, as well as various professional groups, such as lawyers and accountants. Largely through the control of loanable funds, there is central-

ized here the function of coördinating the business activities of a very wide area.

The exercise of this managerial function of coördination and control is at first glance singularly independent of transportation. It does not require the transfer of huge quantities of materials. It deals almost exclusively with information. What is all-important is transportation of intelligence. The mail, the cable, the telegraph, and the telephone bring in its raw material and carry out its finished product. Internally easy contact of man with man is essential. The telephone is prodigally used, of course, but the personal conference remains, after all, the method by which most of the important work is done. Conferences with corporation officers, with bankers, with lawyers and accountants, with partners, with fellow directors, fill the day. The work is facilitated when the time of the men whose time is most valuable is conserved. The district must be conveniently accessible and must be at the heart of the system of communication. It must be arranged so as to give the greatest possible ease of contact among men whose presence is desired in arriving at decisions. The financial district is in effect one big structure; the streets, practically cleared of all except pedestrian traffic, are little more than corridors and air-shafts. The corner of Wall and Broad on a busy morning is much more quiet than many a suburban business corner. The geometrical proposition that the contents of two spheres are to each other as the cubes of their diameters has sent skyscrapers up into the air. This was the economical way to produce accessibility in the center.²

2. "The skyscraper facilitates personal contacts in a way never possible before. From my office on the twenty-eighth floor of a building in the Times Square district, I can get to practically every person of importance in the architectural and business field in fifteen minutes' time." Harvey Wiley Corbett, "New Stones for Old," *Saturday Evening Post*, March 27, 1926.

The closely interrelated and interdependent group in Wall Street find their functions sufficiently facilitated by a central location to make it worth their while to outbid all others for the spot they want. It may be observed that this group of activities in the financial district is concerned, for the most part, with matters of great import, not with petty transactions. A decision as to whether the Kingdom of Norway shall be loaned \$25,000,000 of American capital and whether the rate shall be five or six per cent, is obviously more important than a decision as to whether a neighborhood haberdasher shall be granted a loan of \$250 and at what interest rate. One transaction may require no more physical space than the other and about the same amount of time, but the Norway decision will be made by a man whose time may be worth more per hour than the branch-bank manager earns in a month. A change to a more convenient location, which would save the large banker one hour per day, might justify an increase in site rental of \$30,000 per year (300 hours at \$100 per hour). A similar change in the case of the branch-bank manager would justify an additional site rental of only \$300 (300 hours at \$1 per hour).

Selling in the 42d Street area is for the most part of two kinds. One type is the trade of quality — the sale of the rare, the exclusive, the unstandardized: rich jewels, rare paintings, fashionable clothing, articles beyond the reach of the masses of men. The limited number of potential customers in the United States of America is at present most easily accessible in the neighborhood of Fifth Avenue and 42d Street, near the hotels and the choicest residential district. These are people who can and will pay to have their time saved and their convenience served. The saving in the aggregate is sufficiently large to make it possible for these shops to outbid competing activities for the sites.

The second type may be called the trade of selection, the sale of the required assortment of miscellaneous goods. The modern department store, catering not to the extremely wealthy, but to those of moderate and low incomes, is here the typical agency, altho a conveniently grouped assortment of specialty shops under independent ownership sometimes performs the same function. The peculiar function of the great store is to provide an assortment. A woman may more conveniently buy a yard of blue taffeta in the little store on the main street of her suburban home town. But if she wishes to make her selection from twenty shades of a single quality of an identical fabric, she must go to the central shopping district, to the department store, or to several department stores. Much more must she go there if during the same morning she must buy, after a certain amount of prayerful consideration and comparison, a new hat, a pair of silk stockings to match the blue taffeta, and a new set of dishes. Her time is not worth \$100 per hour. She need not be greeted by a dozen wonderfully gowned saleswomen in a cathedral-like edifice; but she appreciates fairly prompt and efficient service, and must catch the 11.50 train back to Yonkers. The convenience of the thousands of such persons is sufficient to offset the convenience of the hundreds of de-luxe shoppers, with the result that the department store can compete for Fifth Avenue sites on practically even terms with the exclusive shop.

It has already been pointed out that the small scale of some businesses tends to prevent the division and separate location of functions. There are many other special circumstances which also operate to distort the outlines of the ideal urban layout or to retard conformity to it. Ignorance, inertia, chance, and personal idiosyncrasies,

all play a part. The physical characteristics of the terrain and the peculiarities of the transportation system are important factors influencing the pattern. Conditions of land tenure may retard or facilitate conformity to it. Similarly, the absence of competitive pressure is responsible for much bad location. Several of the most striking cases of misplaced plants in New York are factories making patented articles. Nor is it necessary that the monopoly be complete for an effect to be felt. In some cases, the low competitive pressure is traceable simply to the relative insignificance of the factor of site rentals, as compared with the other factors of cost. Perhaps most important of all the distorting factors is the obsolete building. A surprisingly large number of concerns are the beneficiaries of bargains in rents offered by owners of run-down real estate.

Some writers have urged that a distinction should be drawn between "primary" and "ancillary" activities: that primary activities be given precedence in the city plan and that ancillary activities be zoned out. It seems impossible to draw any sharp line between primary and ancillary activities. Certainly a division on the ground that certain activities supply the primary wants of food, shelter, and clothing, while other activities supply luxuries and superfluities, would not be defensible for the purpose in hand. No one could seriously urge complete provision for such primary activities before providing for those which would be thus classed as ancillary. It would be a tragic waste to turn Times Square into a potato patch. The sound procedure is not to divide broad classes of activities into primary and ancillary groups, but rather to develop an accurate scale of functions, in which scale ranking will depend upon ability to make profitable use (all costs considered) of the ac-

cessibility of central sites. The present uses of land are not so irrational as they sometimes seem to be. In a very real sense the people of a community decide for themselves by their expenditures how they desire the land to be used. It is important to establish a sufficient degree of social control over land utilization to make sure that the decisions on points of precedence are socially sound — that all the costs properly chargeable to an activity are assumed by it, and that no activity shall be given the decision on the basis of accounts which fail to include, as costs, the losses suffered by neighbors or the community as a whole. Such social control may be exercised through wise methods of zoning and public finance.

While a general survey of trends and tendencies does demonstrate the need for collective intelligence in coordinating and controlling, to some extent at least, the uses of land in the metropolitan area, it also impresses the student with the need for caution. A hasty and superficial examination of the situation has often led an observer to conclusions which are found upon careful analysis to be entirely unsound. It is not always easy to differentiate the permanent from the ephemeral in a highly dynamic situation such as that in New York. Often a plot which is clearly destined ultimately for a high use is not quite "ripe" for such a use, and during the process of ripening may offer a temporary home for some lower use. To express it in a different way, every growing function has its reserved territory for future expansion, but these reserves are not allowed to lie idle. There is every reason for utilizing them, provided their use is properly controlled. It enables them to be productive of some revenue during the period of ripening. It enables the lower use to take advantage of a more convenient site for the time being, and results in getting

the community's work accomplished with less effort than if such uses were prevented. But intelligent control is necessary. Temporary uses should not be permitted to interfere with the proper functioning of the permanent uses which are destined ultimately to supplant them, and should not be permitted to demand facilities (such as transit, for example) which will not be necessary after the temporary uses have passed away, beyond the ability of the temporary use to finance such facilities on the assumption that their life is conditioned upon the length of temporary use.

To illustrate, let it be assumed that the manufacture of men's clothing is an activity which is destined to give way to other activities on Manhattan Island. Even though it were clearly recognized that the industry was destined to give way ultimately, it might be unwise to attempt to zone the clothing manufactures off the island immediately. They should be encouraged to use the land not now needed for the higher functions, under certain limitations. Obviously, the clothing industry should not be permitted to spoil the character of the choice shopping district by flooding the shopping streets with throngs of non-buying pedestrians. Again, it should not be permitted to block the avenues leading to the shopping district with vehicles which prevent the flow of merchandise and shoppers into the shopping center. Further, it should not be permitted to preempt the transit facilities to the detriment of the shoppers and the employees of merchandising establishments. If the centering of the clothing industry on the island means special transit facilities, the cost of such facilities should be a charge on the industry, to be written off during the life of the function in this location. If the trucks of woollens, of empty boxes, and of outgoing products block the streets which otherwise would be adequate

to the needs of the island, in their efforts to serve temporary occupants of obsolete buildings, the streets should be cleared and made usable for all at the expense of the clothing industry, perhaps by insisting that buildings whose tenants require such services provide suitable loading facilities behind the building line.³

An ordering of functions according to their permanence and importance has clear implications for those who are responsible for problems of traffic and transit. The street system and the rapid-transit system are designed, not for the uses of the coming twelve months, but for the uses of the coming decades. Their life is longer than a year, and they should be designed for the uses which promise to persist during a period long enough to offset their costs.

To state the same thing in a different way — the forces of competition do tend to approximate the ideal layout, and the trends actually in operation are the surest indication as to what is economically sound. However, the trends are the result of the individual decisions of persons in search of a dollar of profit.

It so happens that unless social control is exercised, unless zoning is fully and skillfully applied, it is entirely possible for an individual to make for himself a dollar of profit but at the same time cause a loss of many dollars to his neighbors and to the community as a whole, so that the social result is a net loss. A glue factory on the corner of Park Avenue and 50th Street might show a net profit, considered by itself and ignoring the losses of its neighbors. The truth is that an individual simply by buying title to a single lot should not be given the right to use it as he chooses, whenever by merely buying a lot he does not meet his full site costs. Zoning finds its

3. This is done in some of the new buildings constructed for the women's garment industry.

economic justification in that it is a useful device for ensuring an approximately just distribution of costs, of forcing each individual to bear his own expenses. Regional planning, based upon economic analysis and operating through zoning restrictions, is the intelligent method of bringing about a truly sound economic layout of the metropolis.

This, then, is the type of control needed: that which will ensure the fullest use of the space facilities available consistent with the proper functioning and future development of the entire area, which will allocate to each activity its real costs, and will prevent the parasitic encroachment of lower functions upon the facilities of the higher functions. Planning consists not merely of beautiful pictures of civic centers or interesting projects for pleasure boulevards. It includes also the designation of the uses of areas and the equipment of those areas with means of access. It seeks to achieve its ends by both voluntary coöperation and legal compulsion. Voluntary coöperation from individual business men may be expected to be greatly facilitated if the business men are assured that the plan is economically sound and in conformity with the true values of the community. Moreover, if this assurance can be given, legal compulsion, through zoning and similar methods, can be carried very much further than would otherwise be feasible.

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THE EFFECT OF STOCK SPECULATION ON THE NEW YORK MONEY MARKET

SUMMARY

Plan of investigation, 435. — Amount of deposit currency used in stock-exchange speculation, 436. — Computation of its velocity of circulation, 439. — Restatement of results of the investigation of velocity of circulation of brokers' deposits, 444. — The amount and importance of bank loans used, 446. — Significance of the great increase in street loans during the summer and fall of 1925, 450. — Analysis of the problem of the increase in brokers' loans amplified, 451. — The effect of the expansion of street loans on the further loaning capacity of the American banking system as a whole, 452. — Certain implications of the conclusions arrived at, 455.

IF studies in monetary theory are to be taken as a guide, any investigation of the influence of speculation on money and price phenomena must proceed along two distinct lines. In the first place must be studied the amount and the velocity of circulation of the deposit currency required to finance the transfers of stocks; and in the second place, the amount and importance of bank loans utilized in getting the deposit currency necessary for such transfers. Let us take up these two problems in turn.

I

Deposits subject to check are regarded by most students of monetary theory as a form of circulating medium or currency, the supply of which — if the comparatively insignificant amounts of money in circulation may be neglected — is of approximately equal importance with the volume of transfers to be made, in determining the general price level. Assuming, therefore, without passing judgment, that this estimate of the

importance of the amount of deposit currency is generally correct, it becomes of paramount significance, in an investigation of the money-market effects of stock speculation, to know just how much of such deposit currency is utilized in accomplishing the exchange of securities. And in seeking the effective total of the currency so used, we must obviously pay just as much attention to its rapidity of turnover as to its actual amount. In fact, it will be seen below that the velocity of turnover, because of its extraordinary magnitude, supplies the more illuminating investigation of the two.

The volume of deposits continually utilized for stock-exchange speculation will be found to be relatively very small indeed, ranging from \$10,000,000 to \$50,000,000, and averaging for the period 1921-25 but little over \$15,000,000.¹ The estimates which yield these figures will appear in the account of the computation of velocities, to which I now proceed.

Students of banking have become so much impressed with the similarity in origin and in magnitude of the balance-sheet items "loans" and "deposits," and so completely imbued with the idea of the "immortality of the check," that some have even fallen into the careless habit of assuming that the velocity of turnover of speculators' deposits is approximately equivalent to the turnover of call loans. So far, however, is this assumption from being true, that one's whole attitude toward the relation between stock speculation and the money market undergoes a decided change when the differences in velocities are known.

1. Up to June, 1925, the maximum deposit in the Stock Clearing Corporation on a single day was \$54,000,000, November 10, 1924; the minimum is of no significance because of the continued increase, until recently, in the list of securities cleared through the Stock Clearing Corporation.

Stock-exchange loans turn over but two or three times a year. There is on record at least one call loan which had a life of fourteen years. Brokers' *deposits*, on the other hand, as will be shown, have a velocity ranging from 226 to 250 times a year at least. So the estimate of the amount of deposit currency used in accomplishing the transfer of stock-exchange securities sold is reduced to a surprisingly small proportion of what would be required should the more sluggish velocity of *loans* prevail.

To proceed with the analysis: Suppose that you buy securities of the value of \$100,000 through broker A, with whom we shall assume, in order to avoid margin entanglements, you have a substantial balance. On the following day, A will increase his borrowings by the amount of your purchase,² and, following the usual practice, will immediately check out the whole amount³ in payment for the securities purchased. So far, this loan varies in no respect from many ordinary business loans.

Other brokers, those who have sold the securities in question, receive checks (or approved drafts)⁴ to the amount of \$100,000, deposit⁵ them to their accounts in their banks, and in general immediately pay off, to the same amount, loans which have been "called" in anticipation of the receipt of the additional funds. And all the checks and drafts involved⁶ — those used in paying for securities as well as those arising from the making

2. On account of the nature of the operations of the Stock Clearing Corporation, whereby only balances are settled, this statement is qualified below.

3. Not exactly true, as explained below.

4. From the Stock Clearing Corporation.

5. It should be remembered that it is only the brokers with cash balances from the previous day's business who find themselves with anything to deposit, and who utilize such funds to cancel outstanding loans. Also, it should be noted that a double (or multiple) counting of deposits frequently results from the redeposit of identical funds on the same day.

6. The Day Branch of the Clearing Corporation does not operate on Saturday, and Friday's business is carried over until Monday.

and paying of loans — enter clearings the following day.⁷

And, note well, loans outstanding will not have changed in amount, tho deposits have been used to the extent of \$100,000 to circulate securities. Loans have remained the same in amount, but, after one day at most, deposits will have decreased by \$100,000 and have been replaced by surplus funds to the same amount in the receiving banks.⁸

Nor is this statement the naïve platitude that it may appear. Consider the hypothetical case of a bank without "primary" deposits, doing, on its own resources, a call-loan business to stock-exchange speculators only. Its loan item would consist at any moment of unpaid portions of loans to brokers, while its deposits, except for balances required by the bank as payment for the service of certification and other insignificant amounts, would be made up solely of that day's advances. (This statement is made on the assumption — approximately, but not exactly, true — that advances of one day are claimed in entirety through the clearing houses the following day.) And what is true regarding loans and deposits for such a hypothetical lending institution is likewise true for all banks *in so far as stock speculators' business* is concerned, except that, for them (the banks) deposits would include likewise the money received daily by brokers from their customers. This exception, however, does not vitiate the analysis here being made, because of the fact that brokers have the custom of lending

7. It should be continually borne in mind, however, that the fundamental use of the concept of velocity is in depicting the degree of stagnation of funds in performing their chief function of transferring goods and services — a stagnation which may be either enhanced or diminished by activity for other purposes.

8. It is, of course, understood that loans and deposits both increase when larger quantities of securities come into the market, are dealt in at higher prices, and carried on narrower margins. See below.

on call, or otherwise, any substantial positive balances which may appear in their bank accounts.⁹

The velocity of deposits arising out of loans to stock-exchange speculators therefore can be approximately computed as follows:

$$V_s = \frac{\text{Total deposits expended in transfers of securities sold on the N. Y. Stock Exchange}}{\text{Average new brokers' loans placed daily + average new money deposited daily by brokers + average deposit balances kept by brokers.}}$$

Through the courtesy of Mr. S. F. Streit, president of the Stock Clearing Corporation, data for this computation for the past several years have been made available to the statistical department of the Federal Reserve Bank of New York and, in turn, to the writer. Some approximations, it is true, will have to be made, but these will be carefully pointed out as we proceed.

Taking first the period May 1, 1923, to April 30, 1924, we find the total value of stocks settled for through the Stock Clearing Corporation (Day Branch) during that year was \$7,518,000,000. As approximately one half of all stocks sold (as well as of those borrowed and returned) are eliminated by being balanced against one another, through the operations of the Night Branch of the Stock Clearing Corporation, this figure must be doubled. Hence the approximate total of cleared stocks sold, borrowed, and returned for the period was \$15,036,000,000. To this sum must be added the value of non-cleared and specially cleared stocks, \$1,218,000,000,

9. The positive balances would ordinarily tend to occur in the accounts of brokers carrying "short-sale" accounts in considerable volume, and their lending operations would frequently be handled through the Stock Clearing Corporation. Hence the surplus deposits would often be automatically kept from appearing.

giving a total of \$16,254,000,000 as the value of all hundred-share sales and other transfers. On the average, approximately 25 per cent of such transfers represent the delivery and return of borrowed stocks, and hence should be deducted in order to arrive at the value of hundred-share sales. But, on the other hand, about 25 per cent of the same total should be added to take care of odd-lot sales. Hence, assuming, as we may, that the deductions and the additions approximately balance, we may conclude that our total of \$16,254,000,000 represents fairly accurately the total value of all stock sales on the New York Stock Exchange for the period considered.

Adding the value of rights (\$4,000,000) and of bonds (\$2,207,000,000), the total of all securities transferred on the stock exchange becomes \$18,465,000,000.

By means of the clearing operations, which reduce the amounts paid for securities to approximately the value of balances delivered, total payments were reduced to \$3,326,000,000, including \$1,705,000,000 of loans paid. A sum of \$48,000,000, representing the cash balances (one side) paid through the Night Clearing Branch, must be added, making the grand total of \$3,374,000,000 as the aggregate¹ of bank deposits used in transferring securities sold on the New York Stock Exchange during the period under consideration.

The total value of new loans placed with banks and trust companies *through the agency of the Stock Clearing Corporation* during the year considered was 1,552,000,000, which, according to reasonable dependable estimates, is *in the long run* about one half of the *total new*

1. This sum is deposited with the Stock Clearing Corporation, which in turn deposits it with banks and simultaneously checks it out through the approved drafts mentioned above. These deposits can never be regarded by the receiving banks as an accretion to loanable funds, and hence should not be regarded as deposits for our purposes.

loans placed by stock-exchange dealers. Using \$3,104,000,000 as a fair estimate, therefore, of this total, and counting 250² stock-clearing days in the year, the daily average new loans placed with banking institutions is found to be approximately 12.4 millions. Adding 10 per cent to cover the deposit balances required by the banks for the services of certification, and an additional 10 per cent as a liberal allowance for daily new money coming to brokers from customers and elsewhere³ and for balances resulting from the custom of making loans in round figures, we arrive at a final figure of \$14,900,000.

Assuming therefore that the average daily bank deposits used by stock-exchange traders and brokers is \$14,900,000, we may proceed with the calculation of velocity.

$$V_s = \frac{3,374}{14.9} = 226$$

If therefore, in spite of the numerous necessary approximations, the above computation approaches accuracy, a turnover of 226 times a year would seem a conservative estimate of the velocity of circulation of bank deposits actually used in the transfer of stock-exchange securities during the period May 1, 1923, to April 30, 1924.

Suspicion must be cast, however, on the estimate of one of the most influential figures involved in the com-

2. The question whether 250 or 300 days should be used is perhaps a debatable one. The actual transfers take place in the 250 stock-clearing days, and on Saturdays practically no such payments are made. On the other hand, the question arises whether the velocity computed on the basis of 300 days would not be more nearly comparable with velocities with which it is to be contrasted. After some reflection, it was decided that the clearer picture would be given by using only 250 days.

3. This estimate is necessarily arbitrary. It refers of course to the deposit of cash only and not to that of securities. It would therefore appear a liberal allowance.

putation.⁴ How accurate is it to say that, *for any one year*, the loans negotiated through the Stock Clearing Corporation represent one half of the total brokers' loans negotiated? It seems to be the general feeling "around the street," as well as in the Stock Clearing Corporation, that the equal division of such loans into those negotiated directly and those handled through the Clearing Corporation is, in the long run, reasonably accurate, but certainly undependable for short periods. The practice of brokers varies greatly. Sometimes, when money is easier than the banks care to admit, the great bulk of loans is made directly between brokers and banks. At other times, when, after recent failures of important stock-exchange firms, the banks become temporarily suspicious of other houses, most of the loans go through the Clearing Corporation. Hence, any computation based upon such an estimate for so short a period as one year is admittedly subject to grave error.

It has been thought wise, therefore, since accurate statistics of total new loans placed daily are not available for any extended period, to make the computation for the entire period 1921 to 1925 combined. This computation gives the following result:

$$V_s = \frac{15,066}{63.7} = 235^6$$

4. The method applied to admittedly abnormal years gives widely varying results.

5. A further question may arise, however, with respect to the volume and velocity of the deposits of the Stock Clearing Corporation itself. At the present time (June 27, 1925) it holds in various banks approximately ten and one half million dollars subscribed by its members. Of this amount, approximately \$8,740,000 is held on active deposit, while the remainder is held on reserve on time deposit. (The division, as well as the total, changes from time to time, but only slightly over short periods.) On the basis of the active deposits, the Clearing Corporation draws and deposits (June, 1925) an average of \$22,000,000 daily — the deposits almost exactly balancing withdrawals. Hence, it may be stated that, neglecting — as we should — the constant balances main-

An estimate of 235 would appear, therefore, as probably the best at present available. And, while there is room for considerable error in a calculation thus made, a large one seems unlikely. To understand the basis of this conclusion, however, let us approach the subject in another way.

As seen above, stock brokers' deposits, whether derived from loans, from customers' margins, or from stock sales, are — except for the minimum balances required by the banks in return for the service of certification — immediately checked out practically in their entirety. Is it not evident, therefore, that the active portion of such deposits will of necessity turn over, at the least, but slightly less than once daily? And, since approximately 10 per cent of the deposits is kept inactive by the requirements of certifying banks, cannot the velocity of turnover be pretty safely estimated at not less than $\frac{250}{110} = 228$, a figure little different from that arrived at by the more laborious method above used? And may we not, therefore, become doubly assured of the validity of our result? ⁶

tained simply as a means of payment to the banks for services rendered, the deposits of the Stock Clearing Corporation turn over approximately daily, or about 250 times a year. Furthermore, it should be remembered that the daily deposits made by the Clearing Corporation in its banks represent identically the same funds transferred to it by the member brokers. Hence, they should not be counted again unless, in so doing, we likewise add to velocities approximately 110 per cent of themselves — 110 per cent instead of 100 per cent because, in the foregoing estimates of velocities, the 10-per-cent deposit balance required by the banks for the service of certification has been included. In fact, except to the extent (I think it negligible) that the deposit operations of the Clearing Corporation "tie up" funds of the banks with which they deal, it would seem better to regard such operations as merely a part of the clearing process itself.

6. This reasoning, however, naturally leads us to raise the question whether *all* deposits *arising from loans* do not have similarly high velocities. Such deposits are in general almost immediately checked out and as speedily redeposited, thus furnishing the basis for further loans. And

Using 235, therefore, as the best available estimate of the velocity of circulation of deposits *actually used* in transferring securities sold on the New York Stock Exchange, let us state our results in a way that will make them more significant.

It has been seen above how the operations of the Stock Clearing Corporation during the year May 1, 1923, to April 30, 1924, reduced the necessary payments from \$18,465,000,000 to \$3,374,000,000; and for the three years May 1, 1922, to April 30, 1925, from \$71,055,000,000 to \$15,066,000,000. If, then, as is for many purposes more illuminating, the result of the above computations should be stated without explicit reference to the mysterious economies introduced by the operations of the Stock Clearing Corporation, it can be stated, with considerable conservatism, that for the three-year period May 1, 1922, to April 30, 1925, the purchase

if they are not checked out and redeposited, they serve equally as a basis for additional loans and deposits on the part of the original bank from which they were borrowed. Hence, one is almost led to the conclusion that, to the extent that velocities fail to increase, deposits do.

Expansion of the sort described, however, is far from instantaneous. A banker finding himself with surplus cash will, as a rule, increase loans to about the same extent (or sometimes to a slightly greater extent, because of the fact that his customers in general leave on deposit 5 to 20 per cent of their borrowings; Cf. C. A. Phillips, *Bank Credit*, pp. 44-46), expecting that debit balances at the clearing house will relieve him, in a short time, of an amount of cash of approximately equal magnitude. Should the new deposit accounts be checked out only slowly, or not at all, and debit clearing-house balances consequently fail to meet expectations, a few days at least are lost in expanding loans further. Likewise, time is often lost (in expanding) by the receiving bank. Many checks, daily deposited, are drawn on banks in distant cities, and temporarily increase the "float" rather than cash. Consequently they do not readily furnish the basis for loans which might result in immediate cash withdrawals. Hence, on further analysis, it thus becomes evident that in the case of deposits derived from many types of business loans, there is a considerable slowing down of velocities without compensating increases in amounts. To the writer, the study of velocities of deposits utilized by the various types of businesses as well as by private individuals appears to be an endeavor filled with fruitful possibilities. Such an investigation, however, must be postponed for more elaborate study.

prices of securities bought on the New York Stock Exchange were paid for with a deposit currency having a velocity of turnover of approximately $1,100^7$ times a year. Or, since the average velocity of circulation of deposits is approximately 30^8 times a year, it can be said, in perhaps even more striking terms, that the efficiency of a dollar of bank deposits in transferring stock-exchange securities is approximately equivalent to that of \$37 in ordinary personal and commercial use.

It is evident, therefore, that a vast volume of stock-exchange speculation can be carried on with relatively slight effect on the demand for deposit currency. In fact, when it is borne in mind that, on account of those high velocities, the existing volume of such speculation for the past three years was financed with an average of approximately \$15,000,000⁹ of deposits, is there any wonder that no observable influence on New York money-market rates can be traced?¹

7. The computation is as follows:

$$V_{1922-24} = \frac{18,465}{3,374} \times 235 = 1292$$

$$V_{1922-25} = \frac{71,055}{15,066} \times 235 = 1104$$

8. Estimate made by Federal Reserve Bank of New York. Cf. "Velocity of Bank Deposits," by W. Randolph Burgess, in *Quarterly Publication of the American Statistical Association*, June, 1925.

9. Cf. above, p. 436.

1. This result is in every way consistent with those found by Owens and Hardy in their extremely enlightening statistical investigations of the interrelations between interest rates and stock speculation, recently published under the auspices of the Institute of Economics (*Interest Rates and Stock Speculation*, by Richard N. Owens and Charles O. Hardy, New York, 1925). While the primary aim of that investigation was to discover, if possible, any observable effects of interest rates on stock speculation, it has served almost equally well to bring out the reverse effects of stock speculation on interest rates — the theme of this paper. The fact that these investigators, working with the resources of the Institute of Economics at their command, have shown statistically how insignificant in amount is the influence either of interest rates on speculation or of speculation on interest rates, gives the writer considerable confidence in the results of his own analytical investigation of a

It may be protested, however, that it is the demand, not for circulating medium used in transferring securities, but for brokers' loans, which most largely influences the money market. In other words, it is the increase or decrease in the volume of outstanding brokers' loans which chiefly affects the lending rates in the New York market. Let us proceed, therefore, to the second of the two problems named at the beginning of this paper, and test this contention.

II

In order to avoid confusion between the affairs of a single bank and those of the system as a whole, let us assume that all advances to stock speculators are made by a single great bank in New York City instead of by some fifty or more. Then it is clear that if a broker, buying stock on margin for a customer, borrows from the bank to pay the selling broker, the resulting deposit account — being simply transferred on the books of the bank — normally results in the cancellation of loans to the same amount by the selling broker. Often, however, such repayment of loans does not occur. It may be profitable to determine under what circumstances this is true, and thus discover the explanation of the wide discrepancy between the amount of deposits used in stock

part of the same subject. It should also be added, in support of the results of Owens and Hardy, that Mr. Max Turner, in an unpublished master's thesis written at Cornell under the direction of the present writer, in 1923, came to almost identical conclusions with regard to the slowness of the effect of stock speculation on the New York money market. His investigation was likewise statistical, and it was his striking results which led the writer to undertake the analytical investigation, the results of which are here set forth.

Reference should also be made to the monumental work of Dr. B. M. Anderson, Jr., of the Chase National Bank, who in his vigorous and often brilliant attacks on the quantity theory of money (*The Value of Money*, New York, 1917) stimulated this, in connection with a more far-reaching investigation, the results of which I hope to have published at a not very distant date.

speculation and that of the loans through which they are secured.

It is obvious, of course, that the customer of the selling broker might have ordered the sale for the purpose of withdrawing the funds for other uses. In such cases (and they are common) the selling brokers are not left with enough funds to cancel completely the sustaining loans. Consequently, loans would have been expanded by the margin purchase. Or again, other customers of the selling broker may have decided to scale down their margins by increasing purchases without further deposit, thus preventing the broker from cancelling his loans, and perhaps causing him to expand them.

In the first case, especially when the funds are being withdrawn from the New York money market, it is evident that a tightening of the market occurs simultaneously with an increase in stock speculators' loans. But can the stringency be in any way attributed to the increase in loans?

To answer this question, as well as to clear up certain misconceptions, let us consider the second extremely artificial — perhaps non-existent — case, that of an expansion of loans resulting *exclusively* from a general narrowing of margins by increased carryings. As a rule, of course, such a narrowing of margins on the part of buyers would go hand in hand with the withdrawal of funds by certain of the sellers, thus forcing us to remix the two cases above separated. We can abstract from the usual case, however, and thereby clarify our analysis, by inserting the drastic hypothesis that there shall be no consequent withdrawal of funds from the New York market. For instance, the funds borrowed for the buyers, carrying increased holdings on narrower margins, are paid to banks, or others, relending such funds entirely in the New York market. This situation may

occur when banks or private investors, thinking that the peak of prices has been reached, liquidate their holdings, but, awaiting another purchase opportunity, temporarily leave their funds to be reborrowed on call by their more "bullish" brothers. In such a case, the expansion of loans, it is here contended, will not cause appreciable tightening of the New York money market. And the reason is not far to seek. Regarding again the New York City banking system as one gigantic bank, it will be seen that, on account of the rapidity of turnover of brokers' deposits, money loaned to-day will be available for relending to-morrow, if not sooner,² and that loaned to-morrow, equally available the following day or earlier. Thus on any given day a great increase in loans from the cause assumed — an occurrence not unlikely, tho perhaps rare — would, it is true, tighten appreciably the money market. But barring continued heavy borrowing from the same cause, or withdrawal of funds from the New York market the following day, the tightness would disappear as suddenly as it had come.

2. Money loaned to-day may even be available for relending to-day. For example, a bank, on a certain morning, arranges to lend on call its surplus funds. These funds are used to pay their balances by brokers who, the preceding day, had an excess of purchases over sales. There was, of necessity, however, a corresponding excess of sales over purchases executed by certain other brokers. These brokers in turn therefore claim their right of paying off loans in amounts which in general are almost exactly equivalent to the amounts borrowed by the first set of brokers. For the sake of simplicity, suppose that the two sets of brokers deal with the same bank — an hypothesis that in no way affects the reasoning. Let us suppose further that the borrowing brokers arrange their loans before 11 A.M., and that the paying brokers likewise serve notice, before eleven, of their intention to pay on that day. (It should be borne in mind that loans called before 12.15 are paid the same day, and those after 12.15, the following day.) The bank receiving such notices may therefore proceed to lend these additional funds, which will be received in the form of checks or drafts by 12.30 P.M., and be cleared the following morning along with most of the drafts arising out of its loans. To the extent that this relending occurs within the day, our case is strengthened.

Nor is the above statement in any way exaggerated. On the contrary, it can be put in even more striking form. Suppose, for example, that, on account of unusual stock-market activity, brokers' loans were increased in one day to \$50,000,000 (approximately the recorded maximum). This increased borrowing would naturally have a tendency to tighten the money market, if higher rates were necessary to draw funds from other uses or from outside New York. Under the artificial conditions assumed, however, practically ³ all of the \$50,000,000 loaned to-day would be available for relending to-morrow. Hence, *new* street loans each day might continue at their maximum figure without further tightening the market. In fact, under circumstances like those prevailing in the provincial banks in recent months, I should expect (on account of funds drawn in from country banks) an actual loosening to take place. And, should new loans on any subsequent day fall — as they certainly should — to less than the maximum above assumed, an immediate weakening of rates could be anticipated.⁴ And such a weakening in rates, under the artificial conditions assumed, might go along concurrently with a continued increase in the aggregate ⁵ of outstanding brokers' loans on the books of the banks.

When the increase in loans results from the withdrawals of funds from the New York market, the case is entirely different. Such operations reduce by an equal or even greater ⁶ amount the funds available for lending

3. Such funds as were left on deposit would require the holding by the banks of supporting reserves. To this extent, their lending capacity would of course be reduced. See discussion below.

4. Of course, changes in conditions of the supply of funds are abstracted from.

5. The assumption is here made that the banks continue to do some of the additional new lending.

6. Cf. C. A. Phillips, *Bank Credit*, pp. 38-66.

to-day, to-morrow, and each following day; and therefore lead to a definite and continued tightening of money rates.

What, then, is the significance of the great increase in street loans during the summer and fall of 1925? Without doubt most of these loans were expanded on stock-exchange collateral and for the purpose of paying for securities carried on margin. Also, the resulting deposit accounts were doubtless first used in transferring the securities thus bought and sold. Furthermore, to the extent ⁷ that they were left with the receiving banks, they were available for re-use in the same channels, or for other use, at the discretion of the bankers coming into their possession. But, to the extent that they were withdrawn by the selling owners, — or by the receiving bankers, — naturally they were largely dissipated to other uses. Banks and trust companies, originally holding marketable securities as investments or speculations, sold them to release funds for business borrowers; investment houses, floating new securities, withdrew the funds in order to pass them on to the security-issuing corporations; members of pools, distributing their holdings, departed with their funds to less hazardous undertakings; and private speculators, "cashing in" their profits, retired for the season to Florida or the Riviera, carrying with them their speculative funds. Also, to the extent that such speculative funds were diverted by the banks to other uses, they thereby became largely unavailable for their former use.

Hence the expansion of "street" loans in the New York money market — recently, as in general — may probably be attributed almost exclusively to a with-

7. Because of the reserves required this statement has to be qualified when the funds are left as deposits. See below.

drawal of funds to other uses and to other parts of the country.

Nevertheless it may be objected that the above analysis, however accurate for the so-called "day-to-day" speculation, of course cannot be true for the more important "long-time" speculation, which evidently amounts to such an enormous volume. For, it will be asked, and rightly, do not brokers' loans make up approximately one tenth of the total volume of credit of the country? How is it possible then that anyone can intelligently contend that "long-time" speculation does not affect New York lending rates to a corresponding extent? Qualitatively, the answer is simple, — as given above, — but, quantitatively, it is more complicated.⁸ However, since this criticism has already been received from three persons whose opinions in such matters I value most highly, I shall attempt to find logical support for my position.

Suppose, to make the case as unfavorable as possible, that the funds represented by the three billion dollars of street loans, instead of being loaned largely to brokers, had been all invested directly in securities by the banks themselves. "Can it then be maintained," the critic asks, "that the further lending capacity of the New York market has not been reduced by an approximately equivalent amount?" Let us see.

To make our answer significant, obviously we must first limit the case in exactly the same way that we did for brokers' loans, which the banks' security investments are supposed to replace. Assume then that the three billions of funds thus invested by the banks were received by individuals, bankers, and business firms, who,

8. The quantitative problem is discussed at length in a forthcoming publication entitled *A Third Approximation in Monetary Theory*.

instead of withdrawing them for other uses or to other parts of the country, placed them all on the New York call-loan market. Such a flood of funds obviously could not possibly be used by stock-exchange brokers for accomplishing their security transfers. We have seen above that such transfers require a maximum of little more than fifty million dollars daily and, on account of their rapid velocity of circulation, the same fifty millions of deposits, with but slight deductions, can be used day after day for this purpose. Hence, all but a trifle of the three billions of funds would necessarily flow to other uses, and to other sections where they were in demand. And this is exactly what I contend has happened to the funds now represented by the three billions of street loans outstanding with the New York banks. The conclusion therefore is that, under the artificial conditions assumed, the two cases considered yield identical results on the New York money market. Obviously, however, the restrictions assumed are much less likely to occur with any considerable proportion of funds invested than with like amounts of those loaned to brokers.

The deeper, more subtle, and more important quantitative problem, that of the effect of the outstanding three billions of street loans in New York on the further lending capacity of the American banking system as a whole, remains to be discussed. In dealing with this problem⁹ we use a type of analysis similar to that employed with such excellent results by Professor C. A. Phillips in his outstanding contribution to the theory of bank credit.¹

It is a commonplace in banking theory that loans are limited by the necessity of maintaining certain mini-

9. For the sake of simplicity, all mathematics is omitted. A fuller treatment is being made in the forthcoming publication above referred to.

1. C. A. Phillips, *Bank Credit*, 1921.

mun reserves behind deposits. It is equally true, tho by no means a commonplace, that the expansion of loans is even more drastically limited by the outflow of cash into circulation. Brokers' loans (while the derived funds are being used by brokers) give rise to no cashing of checks and consequently to no loss of cash to circulation. Furthermore, most of that portion of brokers' deposits which is derived from loans never actually appears as "deposits" at all, but is entered directly under the banks' "certified checks" accounts, against which no reserve is required² and probably none held — at least in the case of checks certified for brokers. In fact, some meticulous critic, inclined to "stir up a fuss" over terms, could with justice claim that Part I of this article has little application to our problem. He might say with reason that the transfer of stock-exchange securities is accomplished in large measure, not by the turning over of deposits, but rather by the circulation of "certified checks" accounts, and consequently that talk about the velocity of brokers' *deposits* is largely beside the point.

It follows from what has been already said that brokers' loans, *until the resulting funds become dissipated to other uses and to other parts of the country*, cause neither loss of cash by the New York banks as a whole nor appreciable increase in the deposit accounts of any of the banks of the country. Hence it can be accurately stated that, beyond the time required for the transfer of the funds (approximately one day, as discovered above), the further lending capacity of the banking system as a whole suffers virtually no reduction from an increase in such loans. In other words, the *first* loan expansion,

2. No reserve is required because such "certified checks" accounts are balanced by an equal amount of cashiers' checks (and other cash items) deposited during the day by the brokers for whom the certifications were made. For a mathematical treatment of this subject, see the Appendix at the close.

made as it is to brokers with no loss of cash to the system and with negligible increase in reserve needs, does not "count," as it does in most other types of loans, in determining the ultimate expansion of the banking system as a whole.³ To put the contention into even more striking terms, brokers' loans might expand gradually to six billions⁴ (or even more) without seriously affecting money rates in New York for more than a day or two at a time, and with negligible reduction in the further loaning capacity of the American banking system as a whole.

This is the crux of the quantitative problem. Brokers' loans give rise to deposits ("certified checks" accounts) which are almost immediately transferred in payment for securities purchased the preceding day. Received by the selling broker, they are quickly utilized (1) in paying off loans called in advance, (2) in being re-loaned on call, or (3) in meeting demands of customers drawing on their accounts. In cases (1) and (2), where all the funds remain in the New York market without increase⁵ in deposits or loss of cash to circulation, the lending capacity

3. Cf. C. A. Phillips, *Bank Credit*, Part I, chs. 3 and 4. The writer has estimated that the total expansion for the system as a whole is about $3\frac{1}{2}$ times new cash received, instead of 10 times, as originally computed by Professor Phillips. The exact amount of the expansion has no bearing on the present problem, however.

4. The aggregate of loans could not, of course, be increased indefinitely, because other banking factors than reserves and cash losses begin to assume prominence. For example, most banks, while determining within limits their loan policy, largely by the amount of cash and cash items left with them, will not expand indefinitely their loans without regard to the proportion of capital and surplus to creditor liabilities. This would undoubtedly be found true even in the case of loans so well secured as those of brokers.

The writer does not fail to comprehend, however, something of the dangers of such expansion when for any reason a considerable number of outstanding loans have suddenly to be liquidated.

5. Some increase in deposits would normally result. To the extent of this increase, the further loaning capacity of the banks would be reduced.

of the market is evidently not reduced. But in case (3), where the funds, instead of being used to cancel an equal volume of street loans, or, what is in many cases the equivalent, to supply the demand for an equal quantity of new loans, are on the contrary transferred to the deposit accounts of customers, not only do the funds largely disappear from the New York money market, but also, in general, they either continue as deposits and consequently require a supporting reserve, or else are checked out as money into circulation, and thus cause an even greater reduction in the further lending power of the banks.

Hence, the volume of security transfers⁶ remaining unchanged, additional new borrowing by brokers would become necessary only to the extent that funds were dissipated to other sections or to other uses. Is it not erroneous, therefore, to contend that the so-called "long-time" speculation is utilizing any other funds than those currently needed for day-to-day transfers? And, since such funds, until they leave the New York money market, cause neither outflow of cash from the banks nor significant addition to reserve needs, is it not equally evident that while they are used for speculative purposes, they give rise to but negligible reduction in the further loaning capacity of the banking system as a whole?

If the foregoing conclusions approach accuracy, certain important implications follow. First, as regards the money market.

1. The low and placid interest rates of the summer and fall of 1925, maintained throughout the period of greatest speculative activity in our history, are largely accounted for. With the increasing entrance of the

6. Actual transfers after clearing operations have been accounted for.

"public" (and others) into stock speculation, funds doubtless came into the New York money market from other parts of the country and from other uses. These funds, combined with those supplied by the New York banks, all circulating at the high velocities above computed, presumably accomplished the enormous transfers of securities with almost negligible effects on money rates.

2. The speedy disappearance, during this epoch of great activity, of one- or two-day periods of tightness, without any accompanying reduction in stock sales, is perhaps likewise largely accounted for.

3. The importance (in influencing rates) of the withdrawal of the public from the market, as of its entrance into the market, is indicated. Also, the often apparently great effects on stock prices of relatively insignificant movements of money rates can be understood. The changed cost of money borrowed is probably of negligible influence compared with the other obviously more important effects of the movements into, and out of, the market, of the speculating public.

In the second place, certain other implications appear which have general significance for monetary theory:

1. There seems to be a clear probable solution of Mr. Carl Snyder's riddle⁷ of the close correspondence between the short-time movements of V and of T , with no apparent similarity in their secular trends. If the velocity of circulation of stock speculators' deposits is extremely high, is it not altogether likely that certain other velocities are much higher than the average, and still others consequently much lower? Furthermore, "boom" periods, marked by an increased volume of trade, are usually also accompanied by increased ac-

7. Cf. unpublished statistical investigations of the Federal Reserve Bank of New York.

tivity on the part of speculators, as well as of jobbers and wholesalers, with velocities presumably higher than the average. Hence appears at least a partial explanation of the similarity of the short-time movements of V and T ; while yet their long-time movements may be entirely unrelated.

2. The necessity of correcting and of improving the machinery of attack for the whole problem of the relation between money and prices likewise becomes apparent. Since stock speculation is financed with a deposit currency having a velocity of circulation so extraordinarily rapid, it is evident that increments in the volume of trade from this source — balanced as they are by increased velocities — must be treated entirely differently, in seeking their effects upon other quantities of the equation of exchange, from increments from other sources. Further — also because of presumable radical differences in the velocities of deposits — it is probable that increments in wholesale trade should be treated differently from increments in retail trade, and those in retail trade, from those in other sorts of trade.

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APPENDIX

Quantitatively, the extraordinary result mentioned in note 2 on page 435 can be obtained as follows:

Suppose that Bank A finds itself with surplus cash to the amount of \$ c , on the basis of which it proceeds to expand its loans. We shall compute first the normal expansion of loans and of deposits for Bank A and for the system as a whole when no cash is lost to circulation. Then we shall compute

second for Bank A and for the system the expansion when cash flows in the usual amounts to circulation. In this way a direct quantitative comparison can be secured.

Let r = the average ratio of reserves to deposits maintained by the commercial banks of the country.

" d = the average ratio of derivation deposits to loans for the individual banks of the system. (Most loans give rise to derivation deposits which remain with the lending banks. According to the findings of Professor C. A. Phillips, such derivative deposits average 5 to 20 per cent of the loans extended — Phillips, C. A., Bank Credit.)

" $\$c$ = the amount of the surplus cash on which Bank A proceeds to expand.

" x_l = resulting loan expansion of Bank A.

" x_d = resulting deposit expansion of Bank A.

" c_l = amount of cash lost by Bank A on account of its loan expansion.

" X_l = further loan expansion of the system as a whole resulting from the loan expansion of Bank A.

" X_d = the further deposit expansion of the system as a whole resulting from the loan expansion of Bank A.

" K = average ratio of M' to M , the average deposits subject to check in the banking system to the average amount of money in circulation.

Problem:

Find X_l and X_d :

Case I. When no money is lost by the banks to circulation on account of the loan expansion of the banks.

Case II. When money flows in normal amounts into circulation from the banks.

Solution:

Case I:

$$c_1 = (1 - d)x_1$$

also $c_1 = c - rdx_1$

Then $(1 - d)x_1 = c - rdx_1$

$$x_1 = \frac{c}{rd + 1 - d}$$

$$x_d = \frac{cd}{rd + 1 - d}$$

$$c_2 = \frac{(1-d)c}{rd+1-d}$$

cd

(The above formulae were derived by Professor C. A. Phillips, Bank Credit, p. 71.)

Since $(1 - d)x_1$ overflows to other banks in the system and is received by them in the form of primary deposits, which in turn give rise to further loan expansion, further overflow of cash, and further primary deposits, which again in turn cause still further loan expansion, still further overflow of cash, and still further primary deposits, and so on ad infinitum,

$$\begin{aligned} X_1 &= \frac{c}{rd + 1 - d} + \frac{(1 - r)(1 - d)c}{(rd + 1 - d)^2} \\ &+ \frac{(1 - r)^2(1 - d)^2c}{(rd + 1 - d)^3} + \dots + \frac{(1 - r)^{n-1}(1 - d)^{n-1}c}{(rd + 1 - d)^n} \\ &= \frac{c}{rd + 1 - d} \left[1 + \frac{(1 - r)(1 - d)}{rd + 1 - d} + \frac{(1 - r)^2(1 - d)^2}{(rd + 1 - d)^2} \right. \\ &\quad \left. + \dots + \frac{(1 - r)^{n-1}(1 - d)^{n-1}}{(rd + 1 - d)^{n-1}} \right], \end{aligned}$$

where n approaches infinity as a limit. This infinite series is convergent. Therefore:

$$X_1 = \frac{c}{rd + 1 - d} \left[\frac{1 - \frac{(1 - r)^n(1 - d)^n}{(rd + 1 - d)^n}}{1 - \frac{(1 - r)(1 - d)}{rd + 1 - d}} \right]$$

And since

$$\lim_{n \rightarrow \infty} \left[\frac{(1-r)^n (1-d)^n}{(rd+1-d)^n} \right] = 0$$

$$X_i = \frac{\frac{c}{rd+1-d}}{1 - \frac{(1-r)(1-d)}{rd+1-d}} = \frac{c}{r}$$

Also, obviously,

$$X_d = X_i = \frac{c}{r}$$

Hence, the total loan expansion of the banking system as a whole, when no cash is lost by the banks to circulation, is equal in amount to the surplus cash on which the expansion was based divided by the reserve ratio of the banks. If $r = 10$ per cent, as is approximately true in the United States at the present time, the expansion, under the artificial conditions assumed, would be tenfold. Peculiarly enough, the idea prevails with many economists that the normal expansion of the system is of this magnitude. So great an expansion is possible, however, only when all the loans, like those of brokers, give rise to no loss of cash to circulation.

Let us proceed to the usual case where cash flows normally into circulation.

Case II:

As in Case I,

$$x_i = \frac{c}{rd+1-d}$$

$$\text{But } x_d = \frac{c(1-\gamma)}{rd+1-d}, \text{ where } \gamma = \frac{1}{1+K}$$

$$\begin{aligned} \text{Then } X_d &= \frac{c(1-\gamma)}{rd+1-d} \\ &+ \frac{c(1-\gamma)(1-\gamma-d)(1-r)}{(rd+1-d)^2} \end{aligned}$$

$$\begin{aligned}
& + \frac{c(1-\gamma)(1-\gamma-d)^2(1-r)^2}{(rd+1-d)^3} \\
& + \dots\dots\dots \\
& + \frac{c(1-\gamma)(1-\gamma-d)^{n-1}(1-r)^{n-1}}{(rd+1-d)^n} \\
& = \frac{c(1-\gamma)}{rd+1-d} \left[1 + \frac{(1-\gamma-d)(1-r)}{rd+1-d} \right. \\
& + \frac{(1-\gamma-d)^2(1-r)^2}{(rd+1-d)^2} + \dots\dots\dots \\
& \left. + \frac{(1-\gamma-d)^{n-1}(1-r)^{n-1}}{(rd+1-d)^{n-1}} \right],
\end{aligned}$$

where n approaches infinity as a limit. This infinite series is convergent. Therefore:

$$X_d = \frac{c(1-\gamma)}{rd+1-d} \left[\frac{1 - \frac{(1-\gamma-d)^n(1-r)^n}{(rd+1-d)^n}}{1 - \frac{(1-\gamma-d)(1-r)}{rd+1-d}} \right]$$

And, since

$$\lim_{n \rightarrow \infty} \left[\frac{(1-\gamma-d)^n(1-r)^n}{(rd+1-d)^n} \right] = 0$$

$$\begin{aligned}
X_d &= \frac{\frac{c(1-\gamma)}{rd+1-d}}{1 - \frac{(1-\gamma-d)(1-r)}{rd+1-d}} \\
&= \frac{c(1-\gamma)}{\gamma + (1-\gamma)r}
\end{aligned}$$

Substituting for γ , $\frac{1}{1+K}$

$$\begin{aligned}
&= \frac{\frac{cK}{1+K}}{\frac{1}{1+K} + \frac{rK}{1+K}}
\end{aligned}$$

$$\begin{aligned}
 &= \frac{cK}{1+rK} \\
 \text{And } X_t &= \frac{cK}{1+rK} \left(1 + \frac{1}{K} \right) \\
 &= \frac{c(K+1)}{1+rK}
 \end{aligned}$$

When $r = 10$ per cent and $K = 7$, as is approximately true in the United States to-day (for K , see unpublished statistics of the Federal Reserve Bank of New York),

$$X_d = \frac{7c}{1.70} = 4.1c$$

$$\text{and } X_t = \frac{8c}{1.70} = 4.7c$$

Comparing this result with that of Case I, it will be seen that when no cash flows from the banks into circulation, as in the case of brokers' loans, the possible loan expansion of the system is doubled. In other words, disregarding for the present any reduction in the amount of sustaining reserves against resulting deposits, we see that brokers' loans represent one expansion in 10 as opposed to ordinary business loans which represent one expansion in 4.7. To the extent that reserve requirements fail to apply, as explained previously, the effect of the increase of brokers' loans on the further expansion possibilities of the system becomes still smaller.

In summary, as seen from the formulae developed, the loan expansion of the system is limited to 10 times surplus cash by reserve requirements, and to 8 times surplus cash by the outflow of money to circulation, when each influence is operating separately. When they operate together, the limit is set at 4.7 times. If neither operates, the limit is infinite.

JURISDICTIONAL DISPUTES OF THE CARPENTERS' UNION

SUMMARY

I. The Brotherhood always opposed to dual unionism, 465. — Dispute with the Amalgamated Wood Workers, 467. — Matter brought to attention of A. F. of L., 468. — Downey decision, giving all mill work to Amalgamated, disregarded by Brotherhood, 471. — Aggressive policy adopted by Amalgamated, 472. — Terms of its surrender dictated by Brotherhood, 473. — Dispute with Amalgamated Society of Carpenters, 473. — Strasser decision rejected by Brotherhood, 475. — Plan of amalgamation agreed upon, 476. — Hostilities reopened, resulting in defeat of Amalgamated Society, 476. — II. Trade jurisdictional disputes; with Sheet Metal Workers' Union, 480. — Brotherhood suspended from Building Trades Department for refusal to accept Gaynor decision, 481. — Tampa decision annulled and erection of metal trim awarded to carpenters, 483. — Brotherhood for third time suspended from Building Trades Department, 485. — III. Cost of the jurisdictional disputes, 486. — In spite of heavy cost Brotherhood has probably made a net gain, 491. — Its policy in accord with trade-union theory, 493. — Prospects for elimination of jurisdictional disputes not bright, 493.

THE evil of jurisdictional disputes, both dual-union and trade-demarcation disputes, has been conspicuous in the history of the United Brotherhood of Carpenters and Joiners of America. Since 1888, when the Brotherhood extended its jurisdictional claims to include the machine woodworkers, there has not been a day when the Brotherhood has not been embroiled in a major jurisdictional dispute. It is an open question which of the two forms of jurisdictional disputes, territorial or trade, has given rise to the more serious problems. At the present time the carpenters are engaged in one of the most bitter trade controversies in all trade-union history — their dispute with the sheet-metal workers,

which has already caused a serious disruption in the Building Trades Department of the American Federation of Labor.¹

I. DUAL UNIONS. TERRITORIAL JURISDICTION

When we say that the Brotherhood has jurisdiction over a certain territory, we mean that the national union has the exclusive right within this territory to charter and affiliate local unions. Thus, through control over its local unions it has indirect control over its individual members, and it has assumed control over members who are outside the jurisdiction of any of the branches and yet within the territory of the national union. What has been said with regard to the exclusive character of the jurisdiction of the national union applies with equal force to local jurisdiction. When a local union claims control over a certain territory, it asserts its sole right to organize and affiliate all persons practicing that trade within that special district.

The American Federation of Labor has never countenanced dual unionism. It has consistently refused to

1. In the literature on this subject, the more significant contributions are made by the following:

Solomon Blum. *Jurisdictional Disputes Resulting from Structural Differences in American Trade Unions*. Berkeley, University of California Press, 1913.

Ira B. Cross. *The San Francisco Building Trades*. Berkeley, University of California Press, 1918.

Frederick S. Deibler. *The Amalgamated Wood Workers' International Union of America*. Madison, University of Wisconsin Press, 1912.

Nathaniel R. Whitney. *Jurisdiction in American Building Trades Unions*. Baltimore, The Johns Hopkins Press, 1914.

"Plan for Settlement of Jurisdictional Claims in the Building Industry." *Monthly Labor Review*, vol. xi, p. 248 (August, 1920).

"Building Industry Agreement to Uphold Jurisdictional Board." *Monthly Labor Review*, vol. xiv, p. 734 (April, 1922).

John R. Commons. "The New York Building Trades." *Quarterly Journal of Economics*, vol. xviii, p. 409 (May, 1904).

Theodore W. Glocker. "Amalgamation of Related Trades in American Trade Unions." *American Economic Review*, vol. v, p. 554 (September, 1915).

affiliate any union in a trade which already has an affiliated union. In harmony with the Federation's policy, the Brotherhood has from the outset maintained that there must be but one national union in the carpenters' trade — and of course that that one union must be the Brotherhood. If this policy is to be adhered to, the only possible solution of a dual-union dispute is the reduction of the two unions to one union — a solution which can seldom be reached except after prolonged and bitter strife. The unions are fighting for their very existence, and the only possible compromise is a satisfactory amalgamation which takes account of the interests of both organizations. This is a difficult solution to arrive at, however, and most of the dual-union controversies of the Brotherhood have been concluded only by complete submission of the opposing union.

The Brotherhood early faced the dual-union problem by stating in its constitution: "No member of this U. B. can remain in or become a member of more than one L. U., or of any other organization of carpenters and joiners, under penalty of expulsion."² Almost from the very outset there were two rival unions in the carpenter industry, the United Order of Carpenters organized in 1872 and the Brotherhood of Carpenters and Joiners formed in 1881. In 1888 these two unions amalgamated to form the United Brotherhood of Carpenters and Joiners of America. This amalgamation was effected to the satisfaction of both parties concerned. At that time, however, the Brotherhood had not developed a very strong organization. With its increasing strength it has become more and more uncompromising, and in no case since has it stopped short of complete absorption of the rival union.

2. Constitution, U. B., 1888, art. 6, sec. 7.

In controversies with labor organizations to which the Brotherhood was in principle diametrically opposed, amalgamation was, of course, out of the question. For instance, the Knights of Labor was really a dual organization with respect to all trade unions; and their only possible solution of the difficulty was the ousting of the Knights from those trades. At its inception the Brotherhood could not prevent its members from belonging to both organizations, nor could it hope to drive the Knights out of the carpenter trade. But it did take a definite stand. Secretary M'Guire early pointed out the evils resulting from the formation of carpenters' organizations by the Knights, and complained that those carpenters "offered to work longer hours for smaller wages, when our members were struggling to maintain union rules."³ In the Industrial Workers of the World the Brotherhood also recognized a dual union. When the members of an Oklahoma local asked permission to join also the I. W. W., the executive board refused it on the ground that the I. W. W. was a dual organization with respect to the Brotherhood.⁴ The Brotherhood is unquestionably correct in maintaining that the only way to settle a dual-union dispute with the I. W. W. is to eliminate one or the other union from the trade; for, as in the case of the Knights, fundamental differences in structure and philosophy would make amalgamation impossible.

In the early days of the national organization there were, of course, many local unions which did not immediately affiliate with it. This did not mean that they were opposed to a national organization as such, but merely that on account of the repeated failures to maintain such an organization, they wished before joining

3. Proceedings, U. B., 1888, p. 19.

4. Ibid., 1906, p. 221.

to assure themselves of the Brotherhood's permanency. To be sure they were dual unions, but not in the sense that they laid claim to any considerable share of the territory within the jurisdiction of the Brotherhood. And these unions gradually fell in line. The secretary of the Brotherhood reported in 1898 that during that year a number of local unions had affiliated with the national organization. Certain unions, once affiliated with the Brotherhood, have been suspended or expelled, and as a consequence have remained as independent local unions; but the number of such cases is small.⁵ Usually in cases of suspension either the union has awaited reinstatement, or else the majority of the members have formed a new local and asked for a charter from the Brotherhood.

The principal dual-union dispute engaged in by the Brotherhood, that with the Amalgamated Wood Workers' International Union, was largely caused by the introduction of machinery. The revolving plane was successfully introduced in the early eighteen-forties, and great economy in the smoothing of lumber resulted. This was followed by the introduction of other woodworking machinery, with the result that part of the work formerly done by the outside carpenter, such as the finishing of sashes, doors, window frames, etc., was now transferred to the factory. Altho the carpenters realized that this was an encroachment upon their field, they were unable, having no national union, to make an effective protest. Furthermore, they did not fully realize the extent to which these new workmen would compete with them. This is evident from the fact that not until some years after its formation did the Brotherhood claim jurisdiction over these workers. In the meantime, the cabinet-makers had formed a national

5. Statement of Duffy to writer, March, 1921.

union and were beginning to admit this new class of workmen.

It was not until 1888 that the constitution of the Brotherhood was revised to meet the situation:

A candidate to be admitted to membership in this United Brotherhood must be a journeyman, carpenter, or joiner, a stair-builder, mill-wright, planing-mill bench hand, or any cabinet-maker engaged at carpenter work, or any carpenter or any journeyman running woodworking machinery.⁶

Secretary M'Guire reported to the 1888 convention that three of the unions affiliated with the Brotherhood were composed exclusively of planing-mill bench hands, and two more of sash-, blind-, and door-makers.⁷ By 1890 this number had increased to twenty-one locals composed of planing-mill bench hands, three of sash-, blind-, and door-makers, and five of stair-builders.⁸ The first sign of conflict in the woodworking trades appeared in 1889, when the International Furniture Workers appealed to the American Federation of Labor to settle the dispute between the carpenters and themselves.⁹

In 1890 the situation was further complicated by the formation of a third union in the woodworking trades, namely, the Machine Wood Workers. The carpenters made no move, however, to give up their affiliated unions of machine woodworkers, and of course serious controversies with the national union were the result. Finally, an agreement known as the Indianapolis Agreement was drawn up between the two national organizations and adopted by the carpenters in their 1894 convention.¹ For the time being, at least, the trouble appeared to be over.

6. Proceedings, U. B., 1890, p. 36.

7. Ibid., 1888, p. 14.

8. Ibid., 1890, p. 16.

9. Proceedings, A. F. of L., 1889, p. 34.

1. Proceedings, U. B., 1894, p. 42.

But while making peace with one union the Brotherhood was declaring war on another. At this same convention the request of a cabinet-makers' union in New York to become affiliated with the Brotherhood was granted in such manner as to apply to all sections of the country.² A queer twist was given the situation when the very next year the Machine Wood Workers and the Furniture Workers amalgamated to form the Amalgamated Wood Workers' International Union.

In its 1898 convention the Brotherhood resolved that all existing agreements with other carpenters' or woodworkers' organizations be abrogated and that no future agreements be entered into. Continued strife with the Amalgamated Wood Workers, varied by several futile attempts to adjust the difficulty in a manner satisfactory to both sides, finally brought the matter to the attention of the American Federation of Labor (1901). The Amalgamated charged the Brotherhood with persistent violation of agreements and presented a resolution asking recognition of its right to "full and sole jurisdiction over the factory woodworkers, whether employed in a planing mill, piano, cabinet, or interior-finish factory."³ It based its claim upon three grounds: (1) the International Furniture Workers' Union had had jurisdiction over cabinet-makers, finishers, and machine woodworkers; (2) the Brotherhood had conceded to the Machine Wood Workers' Union jurisdiction over machine hands engaged in woodworking factories; (3) on January 1, 1896, the Machine Wood Workers' Union was amalgamated with the Furniture Workers' Union, for the purpose of uniting under one jurisdiction the factory woodworkers of America, and therefore the new organization should have for its

2. Proceedings, U. B., 1894, p. 47.

3. International Wood Worker, January, 1902, p. 1.

jurisdiction that which was recognized as the jurisdiction of the two unions from which it was formed.⁴ The committee on grievances, to which the matter was referred, recommended that the Federation defer action until the two parties in question had made further efforts to settle their difficulties. In April, 1902, however, the executive council of the Federation decided that the Amalgamated had exclusive jurisdiction over cabinet-makers and factory workers.⁵

At the 1902 convention of the Brotherhood the whole controversy was the subject of a good deal of discussion. The action of the Federation came in for especial condemnation. Armed with the authority granted it by the Federation, the Amalgamated had begun an aggressive fight to win back the disputed workers. This did not relieve its already strained relations with the Brotherhood. Attention was called to the fact that at its Louisville convention the Federation had adopted the following recommendation:

That the A. F. of L. shall hereafter refuse to decide questions of jurisdiction involving National or International bodies unless by consent of the opposing interest and with the understanding that each is willing to accept the decision of the A. F. of L. as a final settlement of the dispute.⁶

The Brotherhood then adopted resolutions reaffirming its jurisdiction over all carpenters and woodworkers, denouncing the Amalgamated as a scab organization, and refusing to recognize the decision of the A. F. of L.⁷

A convention of the Federation was held later in the year and definite action was taken in an effort to settle the controversy once for all. First the convention disposed of the request of the Brotherhood that the Amalgamated's charter be revoked, refusing it on the ground

4. *International Wood Worker*, January, 1902, p. 2.

5. *Proceedings, U. B.*, 1902, p. 44.

6. *Ibid.*, p. 197.

7. *Ibid.*

that the primary cause of the trouble had been a change of policy on the part of the carpenters. With the consent of the carpenters, provision was made for the appointment of an umpire to settle the dispute. Mr. P. I. Downey was chosen for this office by a committee representing equally the two rival organizations.

On March 11 of the following year Mr. Downey rendered his decision, which gave to the Amalgamated complete jurisdiction over "all woodworkers in planing mills, furniture and interior-finish factories," but granted the carpenters jurisdiction "over all work on new and old buildings and the putting up of store and office fixtures."

Since this decision was not in accord with the desires of the Brotherhood, the carpenters simply refused to abide by it. Many letters and resolutions urging the withdrawal of the Brotherhood from the A. F. of L. were received at the general office.⁸ While the Brotherhood did not take this step, it did renew its campaign for one and only one union in the woodworking industry, resolutely ignoring the Downey decision. At the 1903 convention of the A. F. of L., the Amalgamated reopened the matter by demanding revocation of the Brotherhood's charter unless the carpenters agreed on or before February 1, 1904, to accept the Downey decision. The carpenters countered with a request that that decision be annulled, on the ground that they had not been notified to appear and present their reasons for refusing to live up to it. They also accused the Amalgamated of unfairness in having made an agreement with a New York manufacturers' association calling for a nine-hour day. The Amalgamated replied that this action was simply retaliatory, the carpenters having refused to abide by the Downey decision.⁹ The action of the

8. Proceedings, U. B., 1904, p. 139.

9. Proceedings, A. F. of L., 1903, p. 85.

Federation was to adopt a committee report recommending that the Downey decision be sustained.¹ The carpenters ignored this action, continued to disregard the Downey decision, and renewed their efforts to take members away from the Amalgamated.

Ensuing attempts on the part of the Federation to bring the two organizations into conference failed, and the 1904 convention of the Federation recommended to the executive council that the carpenters be suspended unless they accepted the Downey decision.² To the 1905 convention of the Federation the executive council reported that revocation of the Brotherhood's charter would not accomplish the desired result, and that it had not acted, therefore, in accordance with the recommendation of the 1904 convention.³

The next few years witnessed many fruitless attempts to reach some sort of agreement. The Amalgamated held out for the Downey decision, while the carpenters insisted that the only solution agreeable to them was complete absorption by the Brotherhood of the rival union. Finally, at their 1909 convention the woodworkers adopted an aggressive policy which was really their last resort. The ranks of the Amalgamated had suffered greater and greater depletion; in 1908 there was but one seventh of the number there had been in 1904. The Brotherhood's aggressiveness was having its effect, and the Amalgamated, having failed by peaceful means to gain its ends, now decided to meet war with war. Never again, unless the carpenters recognized their jurisdictional claims, would members of the Wood Workers' Union sit in conference with members of the Brotherhood. This decision, made at the 1909 con-

1. Proceedings, A. F. of L., 1903, pp. 243-246.

2. Proceedings, U. B., 1904, p. 139.

3. Proceedings, A. F. of L., 1905, p. 72.

vention of the woodworkers, was really a challenge to the Brotherhood, and the Brotherhood accepted it as such.

In the vigorous renewal of hostilities it soon became clear what the outcome would be. Evidently the Federation regarded the matter as decided, for at its 1909 convention the Wood Workers' Union was ordered to amalgamate with the Brotherhood, a complete reversal of policy on the part of the Federation. The woodworkers, altho growing weaker and weaker as the conflict continued, paid no heed to this decree. At the Federation's 1911 convention, held in Atlanta, they were again ordered to amalgamate with the Brotherhood.⁴ Before long the two organizations met in conference, and the Brotherhood dictated the terms of the agreement which finally brought to a close perhaps the bitterest dual-union dispute in the history of the American trade-union movement.⁵ On January 10, 1912, the agreement went into effect and the Amalgamated was completely absorbed by the United Brotherhood.

Second only in importance to this controversy was the Brotherhood's dispute with the Amalgamated Society of Carpenters. This society, which was founded in England in 1860 and is one of the strongest unions in that country, established branches in Ireland, Scotland, Canada, New Zealand, Australia, and the United States.⁶ It was really the parent organization of the carpenters' trade-union movement in the United States. Those who had been members in the old country were well versed in the principles of unionism and were of great assistance to the newly founded Brotherhood. In the early days the two organizations were held together by

4. *Proceedings, U. B.*, 1912, pp. 128-130.

5. *Ibid.*

6. M'Neill, *The Labor Movement*, 1887, p. 354.

a strong bond of sympathy. But, as the Brotherhood grew stronger, a rivalry developed which was productive of disputes and conflicts injurious to both sides.

It will be recalled that the controversy with the woodworkers arose because the Brotherhood extended its jurisdiction to include workmen whom it had not formerly claimed. Entirely different was the situation so far as the Amalgamated Society was concerned. Here the seeds of conflict were present from the very beginning, and only because neither side at first pressed its claims, was that conflict for a time staved off. From the beginning both sides claimed jurisdiction over practically the same workmen.⁷

Prior to the 1898 convention, agreements entered into by the Brotherhood and the Amalgamated Society, agreements which appear to have been fairly well kept, prevented any open hostility between them. The reader will recall that it was at this convention that the Brotherhood in its battle with the woodworkers abrogated all existing agreements and declared its intention of refusing to make new ones. Altho this resolution applied to the Amalgamated Society, the convention passed another aimed specifically at it.⁸

Trouble had for some time been seething under the surface,⁹ and frequent and bitter were the quarrels and feuds of the ensuing years. Altho both organizations realized that their own interests were endangered by the recurring opposition, they seemed unable to bring about a consolidation. The Amalgamated Society favored an equal union; the Brotherhood demanded complete absorption of the Amalgamated Society. Finally, at the 1902 convention of the Brotherhood the matter was referred to the general executive board for

7. Proceedings, Building Trades Department, 1908, p. 22.

8. Proceedings, U. B., 1898, p. 63.

9. Ibid., 1902, p. 44.

the drawing up of terms whereby the two organizations might be merged into one. The board in turn referred it to the Federation, which, at its 1902 convention in New Orleans, passed a resolution providing that a committee composed of five men from each organization should meet and select an umpire to draw up an agreement. After an unsuccessful meeting in New York City the committee met in Cleveland on August 17, 1903, and succeeded in choosing Mr. Adolph Strasser, former secretary-treasurer of the Cigar Makers' International Union and one of the men most responsible for the formation of the A. F. of L.¹

On October 20, 1903, Mr. Strasser rendered his decision, providing for amalgamation of the two unions without loss of identity by either of them. He asked that in the meantime the two unions enter into a special agreement to be in effect for the year ending January 1, 1905, when the proposed amalgamation was to take place. It was his desire that immediate action be taken to stop the warfare. Both unions accepted the temporary agreement, and submitted the plan for amalgamation to their respective memberships. The Amalgamated voted to accept the plan;² the Brotherhood defeated it, 24,473 to 8,988.³

After many bitter conflicts resulting in disorganization of the workers in many places, notably in New York City and Denver, the controversy was finally referred to the A. F. of L. The Atlanta convention recommended a conference between representatives of the two organizations, and in case no agreement could be reached, submission of the whole controversy to the executive council of the A. F. of L., whose plan for amalgamation both sides must accept. The conference of representa-

1. Proceedings, U. B., 1904, p. 34.

2. Ibid., 1906, p. 35.

3. Ibid.

tives having proved fruitless, the executive council met and rendered a decision requiring amalgamation upon the terms proposed by the United Brotherhood.⁴ The Amalgamated refused to accept the decision and in consequence was suspended from the Federation.⁵ Finally, in November, 1913, the two societies agreed upon a plan of amalgamation and the trouble appeared to be over.⁶

During the next few years there was no serious trouble between the two organizations and the plan of amalgamation seemed to be working nicely. In his report to the 1924 convention, however, President Hutcheson said:

In 1914 when the Plan of Solidification was put into effect, it was hoped that we had accomplished what we had long desired, namely, bringing into our organization all men working at the various branches of our trade. While that was achieved to a certain extent, yet in many instances the laws, rules and regulations of our Brotherhood were not observed, due principally to the attitude of those who were looking after the affairs of the Amalgamated. There was an apparent effort on the part of those active in the interest of the Amalgamated, not only to continue to take exceptions to the provisions of our Constitution, but they endeavored to organize and install new Local Unions under the Amalgamated banner.⁷

The Brotherhood charged that in the early part of 1923 the executive committee of the Amalgamated Society in America and Canada had taken steps to form a new organization; that the local unions of the Amalgamated Section of the Brotherhood had been notified that the time had come for the Amalgamated again to function as an independent organization, and that the agreement entered into with the Brotherhood in 1914 should no longer be recognized. This the Brotherhood accepted as a renewal of open hostility,

4. Proceedings, U. B., 1912, pp. 130-134.

6. The Carpenter, November, 1913, p. 13.

7. Proceedings, U. B., 1924, p. 46.

5. Ibid.

and sent letters to all local unions of the Amalgamated Section, inviting them to take full membership in the Brotherhood. To the 1924 convention of the Brotherhood President Hutcheson reported:

All Local Unions of the Amalgamated Section in the United States took advantage of the dispensation and the members thereof with the exception of a few individuals are now enjoying full membership in our Brotherhood. The Amalgamated members in Canada with few exceptions likewise availed themselves of the opportunity to become full members of our organization.⁸

Dual-union controversies seem, for the time being at least, to be over for the Brotherhood. Neither of the two big disputes, those with the Amalgamated Wood Workers and with the Amalgamated Society of Carpenters and Joiners, was finally settled until the Brotherhood brought the opposing organization to its knees, completely beaten. With this record behind it, it is hardly likely that in the near future another organization will develop in the woodworking industry strong enough to cope with the United Brotherhood, or even to create any considerable disturbance. At present there seems to be but one possibility for another dual-union dispute with the Brotherhood. Should the Brotherhood, as in the case of its quarrel with the Amalgamated Wood Workers, extend its jurisdiction claims, — there are no present indications that it will do so, — disputes might arise no less bitter and devastating than those we have just considered.

II. TRADE JURISDICTION

In addition to defining the territory over which it claims control, a union must also define the kinds of work over which it claims control in that territory. In either case "control" means exclusive control, and we

8. Proceedings, U. B., 1924, p. 46.

have seen the extent to which a union will go in order to make its territorial control absolutely exclusive. Quite as firm is its determination to make its trade jurisdiction absolutely exclusive.

Not until 1886 do we find any attempt on the part of the Brotherhood to make its trade claims specific. These first claims included all competent carpenters and joiners engaged at woodwork, stair-builders, mill-wrights, planing-mill bench hands, cabinet-makers engaged at carpenter work, and carpenters running woodworking machinery.⁹ Had the carpenter industry remained stationary, this claim, once established, would to a large extent have prevented jurisdictional troubles. But the introduction of new machinery and new methods has been and is continually depriving the carpenters, in common of course with other craftsmen, of work which was formerly theirs; and they have had to be continually on their guard to keep work from being taken away from them. Hence, as changes in the industry have developed, the Brotherhood has had to modify, extend, and make more detailed its jurisdictional claims. What is true of the carpenters is, of course, true to some extent of other crafts. But the carpenters have had their peculiar difficulties in maintaining stationary jurisdictional claims conducive to the best interests of the Brotherhood, and in consequence have been a party to many trade jurisdictional disputes. Some of the biggest changes in the building industry have centered around the work of the carpenters.

If the carpenters have applied any single test to the determination of what their jurisdictional claims should be, that test has been the probable effect upon the interests of the individual members of the Brotherhood.

9. Constitution, U. B., 1886, art. 6, secs. 1, 2.

Altho the results of the application of this test may appear to be inconsistent, the underlying motive has in every case been the same. For example, in 1907 the Brotherhood claimed jurisdiction over all "journeymen carpenters and joiners . . . whether employed on the building or in the preparation and manufacture of the material for the same." Here the material seems to have been the determining factor. In 1920 we find the Brotherhood claiming jurisdiction over all kinds of work "where the skill, knowledge and training of a carpenter are required, either through the operation of machine or hand tools."¹ Here the type of training required is the test. At another time it was declared that, "every man employed in the woodworking industry — handling edged tools — ought to belong to the United Brotherhood of Carpenters and Joiners of America."² The president of the Brotherhood claims that, because the carpenter trade "is one of the most general and complete trades a man can learn,"³ the carpenters should have jurisdiction over particular kinds of work. We find still a different test in use in an agreement between the carpenters and the bridge and structural-iron workers: "The Bridge and Structural Iron Workers claim the erection and removal of all necessary false work, but as this is only of a temporary nature and refers more particularly to the erection and construction of steel and iron bridges, it was conceded that this comes properly under the jurisdiction of the iron workers."⁴ Because the work is "temporary" and merely preliminary to the permanent work, the carpenters concede it to the iron workers. But altho the carpenters appear to have shifted ground in their jurisdiction claims, in reality they have applied but one

1. Constitution, U. B., 1924, sec. 7.

2. Proceedings, U. B., 1904, p. 45.

3. Ibid., 1910, p. 67.

4. Ibid., 1908, p. 211.

test — the probable advantage or disadvantage to the individual members of the Brotherhood. The president of the Brotherhood expressed this idea when he said:

With the improvements and changes being made in the manufacture of trim, etc., for buildings, especially in the large cities, and our work becoming more and more classified year by year, I have noted that the carpenter, in order to hold what rightly belongs to him, must control the manufacture of the material — the carpenter of to-day may be the millman of to-morrow.⁵

With these facts in mind, it can cause no great surprise that we find the United Brotherhood working out its jurisdictional claims in great detail and thereby becoming involved in numerous disputes with other unions. It has had disputes with the Structural Iron Workers' Union, the Elevator Constructors' Union, the Tile-Layers' Union, the Painters' Union, the Asbestos Workers' Union, the Car Workers' Union, the Hod Carriers' Union, the Wire and Metal Lathers' Union, the United Brewery Workmen, the Operative Plasterers and Cement Finishers; still other unions are the Bricklayers', the Masons' and Plasterers', the Coopers', the Longshoremen's, the Machinists', the Upholsterers', the Brotherhood of Maintenance of Way Employees, the Dock Builders', and the Sheet-Metal Workers'.⁶ Its controversy with the last named has been one of the bitterest and most prolonged of all its trade-jurisdiction disputes, and will therefore be considered in some detail.

The trouble began with the introduction of metal trim. The carpenters claimed the new kind of work on three grounds: (1) that to put up metal cornices required the same kind of skill as to put up wooden ones; (2) that the metal work simply replaced the woodwork; (3) that carpenters' tools are used to put up metal trim. The sheet-metal workers based their claim on

5. Proceedings, U. B., 1904, p. 38.

6. Proceedings of U. B. conventions.

the ground that the material used was that over which they had always claimed jurisdiction. The result was continued strife between the two unions and increasing bitterness as the struggle became more intense. A number of attempts to come to an agreement having failed, the two organizations finally agreed to submit their respective claims to Judge William J. Gaynor of New York. Judge Gaynor's decision, delivered on April 23, 1909, awarded the metal trim to the carpenters on the ground that the work required the skill of a carpenter rather than that of a sheet-metal worker. The decision was of course unsatisfactory to the sheet-metal workers, who refused to abide by it.

The Building Trades Department of the A. F. of L., to which the sheet-metal workers carried the controversy, took the matter up at its 1909 convention, held at Tampa, Fla. The sheet-metal workers charged that Judge Gaynor was technically unfit to render a decision. The majority report of the adjustment committee, to which the matter was referred, upheld the Gaynor decision,⁷ but the minority report recommended the awarding of metal trim and doors to the sheet-metal workers. After a heated discussion the minority report was adopted, and all parties affiliated with the Department were ordered to abide by the decision of the convention.⁸ As usual, the Brotherhood refused to give in and only increased the aggressiveness of its tactics. After numerous requests on the part of the Building Trades Department that the Brotherhood accept the decision of the convention, the latter was suspended from the Department.⁹

The Building Trades Department then asked the A. F. of L. to suspend the Brotherhood. In his reply

7. Proceedings, B. T. D., 1909, p. 83.

8. *Ibid.*, pp. 83 ff.

9. *Ibid.*, 1911, p. 59.

President Gompers did not discuss the merits of the case, but recommended that, in the interests of the whole labor movement, the Brotherhood be reinstated in the Department.¹ The executive council of the Department agreed to place the matter before the next convention. This was done, and the 1911 convention of the Department voted to lift the suspension, and invited the Brotherhood to reaffiliate.² The Brotherhood put the proposition to its membership, which by a vote of 32,077 to 15,490 decided to accept the invitation. The reaffiliation took place on May 1, 1912.³

Since the readmission of the carpenters was accomplished with little regard to the cause of their suspension, no settlement of their controversy with the sheet-metal workers resulted. As early as at its 1912 convention the Building Trades Department had to censure the carpenters for doing work for employers in New York City who were engaged in a lockout with the sheet-metal workers.⁴ The Brotherhood held that its reinstatement at the instance of the Federation constituted an admission that the Tampa decision had been wrong. Consequently it requested that the two unions meet in conference to settle the trouble.⁵ The question of a conference was referred to the committee on adjustment, which brought in a divided report. The majority report recommended that the carpenters' request be granted; the minority report, that it be refused on the ground that the decision of the Building Trades Department had settled the question, and that the Brotherhood must abide by the decision. When the convention adopted the minority report, President

1. Proceedings, B. T. D., 1911, p. 62.

3. Ibid., 1912, p. 73.

5. Ibid., p. 88.

2. Ibid., p. 85.

4. Ibid., p. 136.

Kirby of the Building Trades Department, a prominent member of the Brotherhood, stated that the United Brotherhood would not accept the decision of the convention.⁶ And soon afterwards the carpenters by a vote of 40,792 to 13,328 withdrew from the Department.⁷ Once again the Federation interfered, and in 1915 instructed the carpenters to reaffiliate with the Department, stating that there could be no rightful objection by the Department.⁸ So the carpenters were readmitted, but not without strong opposition.⁹ Many held that they should first agree to accept the decision of the Department in the sheet-metal dispute; but since the convention did not demand this, no progress was made in the way of a settlement.

At the 1915 convention of the Department, a resolution was introduced asking that the Tampa decision be rescinded and that the manufacture of hollow-metal trim be conceded to the sheet-metal workers; its erection, to the carpenters.¹ On the ground that by law a grievance once settled cannot be reopened, the sheet-metal workers objected even to a consideration of the resolution. The resolutions committee, unwilling to make a recommendation, threw the resolution back on the floor. After much discussion a resolution was finally adopted annulling the Tampa decision and awarding the erection of metal trim to the carpenters.

The controversy, instead of being settled, was only further complicated by this complete shifting of ground by the Building Trades Department, undoubtedly due in part to the general feeling that the support of the Brotherhood was necessary to the Department. As James Duncan of the Granite Workers' Union expressed

6. Proceedings, B. T. D., 1912, p. 141.

7. Ibid., 1914, p. 63.

8. Ibid., 1915, p. 38.

9. Ibid., p. 35.

1. Proceedings, U. B., 1916, pp. 219, 220.

it, "I have argued in season and out of season that a Building Trades Department of the American Federation of Labor without the Carpenters in it is almost a joke."² When the sheet-metal workers almost immediately appealed the above decision to the executive council of the Federation, the council sustained the action of the Department.³

Hope of settlement was renewed when the building trades inaugurated a new and original scheme for the settling of jurisdictional disputes. The plan as first advanced by a group of contractors, encouraged by John B. Lennon, conciliator of the Department of Labor, called for the formation of a board to settle jurisdictional disputes in the building industry. At a general conference of international presidents and prominent contractors, held in March, 1919, a definite plan was formulated.⁴ At a later conference this plan was adopted, and when submitted to the Building Trades Department at its 1919 convention, was also adopted by that body.⁵

It was inevitable that the carpenters' dispute with the sheet-metal workers should reach this National Board for Jurisdictional Awards. The sheet-metal workers presented the case, and on December 4, 1920, the Board rendered its decision:

In the matter of the controversy between the Sheet Metal Workers and the Carpenters over Hollow Sheet Metal Frames and Sash, it is decided that the setting of hollow-trim metal window frames and the hanging of hollow-metal sash, when such frames and sash are made of No. 10 gauge metal or lighter, is the work of the Sheet Metal Workers.⁶

The conditions of the dispute were once more reversed, and the Brotherhood refused further to par-

2. Proceedings, U. B., 1924, p. 148.

4. Ibid., 1920, p. 450.

6. Proceedings, B. T. D., 1921, p. 37.

3. Ibid., 1916, p. 51.

5. Ibid., p. 453.

ticipate in the activities of the National Board for Jurisdictional Awards.

The whole matter was aired before the 1921 convention of the Building Trades Department, and a resolution was passed accepting the decision of the Board of Awards.⁷ President Hutcheson of the Brotherhood in addressing the convention said:

We again notify you that we cannot accept the decision, and that still goes, and you might as well take action now if you are going to take it. . . . The Brotherhood of Carpenters is not looking for a fight, but if they have to fight they will fight all the way, and the sooner it is started the sooner it will be over.⁸

A motion was passed suspending the carpenters unless they agreed to comply with the decision of the Board, but the result was so close that, had the carpenters voted, it would have failed.⁹ Since the carpenters, of course, refused to accept the decision, they were once more out of the Building Trades Department.

Several later attempts were made to reopen the case, but all ended in failure, primarily because the Board of Awards refused to grant a rehearing until the Brotherhood was reaffiliated with the Building Trades Department, while the Brotherhood declined to reaffiliate until a rehearing had been granted.¹ Finally, the Brotherhood adopted the position that it would not again reaffiliate until the Department had severed all relations with the Board of Awards, which position it still maintains. There is bitterness, not only between the two organizations chiefly involved, but among the other building trades, all of which have in some measure been drawn into the controversy through their affiliation with the Department. The existing situation is described by Mr. Hedrick of the painters:

7. Proceedings, B. T. D., 1921, p. 109. 8. *Ibid.*, pp. 109, 110.

9. *Ibid.*, pp. 124, 125. 1. Proceedings, U. B., 1924, pp. 33, 37.

In New York the Carpenters are affiliated with the majority of the trades that are represented here to-day, but in an organization that is not recognized by the Building Trades Department or American Federation of Labor. In Chicago the situation is in doubt owing to the controversy between the officials, but at the present time they are on our side of the house. In Los Angeles the Carpenter is on the other side of the house. In Cleveland our organization has thrown in its lot with the Carpenters. A chaotic condition.²

III. CONCLUSIONS

Any gain to the Brotherhood through these controversies has been purchased with a price. That price has been paid by the Brotherhood itself, by the other unions participating, by the trade-union movement as a whole, by the general public, or by a combination of these.

To the Brotherhood one element of cost has been the large expenditure of money involved. Whether or not it has lost in membership as a result of its jurisdictional battles cannot of course be ascertained, but it is doubtful whether this loss, if any, is at all serious. The Brotherhood has unquestionably paid a big price in the form of the bitter hostility which other unions have developed toward it — not only those directly engaged in the disputes, but others which strongly disapprove the Brotherhood's policy in its relations with other unions. The other building trades, which are smaller and therefore probably more dependent upon the success of the Building Trades Department, can hardly have been made more friendly by the Brotherhood's desertion. The Brotherhood has also had to pay heavily in the form of increased hostility on the part of the employers and heightened distrust on the part of the public. Employers already bitter against the union have made good use of jurisdictional disputes as ammunition

2. Proceedings, B. T. D., 1923, p. 125.

in their fight to discredit it, and many friendly employers have undoubtedly been estranged. An employer has a contract to fulfill. He is paying the union rate of wages, working union hours, and employing only union men, and everything seems to be satisfactory. Suddenly a jurisdictional dispute arises between the carpenters and another building trade, and the employer, through no fault of his own, is seriously hampered in his efforts to fulfill his contract. Is it strange that his friendliness toward the union changes to disgust, or even open hostility? And, of course, the public finds it difficult to understand why the men go out on strike when the employer is meeting the demands of the union with regard to wages, hours, and the exclusion of non-union men. During the dispute between the Brotherhood and the Amalgamated Wood Workers, employers meeting all these demands were by both unions placed on the "unfair list" when they employed members of the opposing union.³

Secretary Duffy of the Brotherhood said in 1911:

It is a shame, when we have good friendly owners, builders and architects, who are willing to place in their contracts a provision that union labor only must be employed, and when the building is only half completed have the workers go out on strike. The public does not understand it, and it seems nobody understands it but ourselves. All the public see is that there is a job going up under union conditions and it is struck.⁴

The trade unions which have opposed the Brotherhood have, of course, suffered similarly, but in most cases without the compensations the Brotherhood has had; for the Brotherhood has been too strong for most of them and has deprived them of the spoils of war. In addition, most of them have lost in membership and have been materially weakened. The Amalgamated

3. Proceedings, A. F. of L., 1906, p. 73.

4. Proceedings, B. T. D., 1911, p. 27.

Wood Workers and the Amalgamated Society of Carpenters were annihilated.

That the trade-union movement as a whole has suffered goes without question. The carpenters have been as guilty in this respect as perhaps any other trade union. But labor is not the only sufferer. The employers and the general public have their share to bear. As Professor Commons says in speaking of jurisdictional disputes in New York, "Building construction was continually interrupted, not on account of lock-outs, low wages, or even employment of non-union men, but on account of fights between the unions. The friendly employer who hired only union men, along with the unfriendly employer, was used as a club to hit the opposing union. And the friendly employer suffered more than the other."⁵ The general public's share of the cost has taken the form largely of building delays and increased cost of building.

Unquestionably the cost of these jurisdictional disputes has been high. Has the Brotherhood's gain been sufficient to warrant this expenditure? We must distinguish here between the cost to the Brotherhood and the total social cost. Of course, this distinction cannot be clearly defined, because damage done to the trade-union movement as a whole is bound to be felt by the Brotherhood. But it is quite possible that, altho the total social cost is greater than the Brotherhood's gain, the Brotherhood itself, considered independently, may stand to win. In this case the Brotherhood might say, "What we are concerned with is the net gain to our organization. If our gains exceed our losses, we care not that some of these gains are made at the expense of other organizations or of society at large." It is our

5. Commons, "The New York Building Trades," in this Journal, May, 1904, p. 409.

purpose then to consider, first, whether or not the Brotherhood itself has made a net gain, and second, whether or not, if much of that gain is made at the expense of other organizations and of society at large, the Brotherhood is justified in trying to make it.

The Brotherhood's gains cannot, of course, be measured in terms of money, or even estimated with any degree of accuracy. At best only broad conclusions can be arrived at. It goes without saying that the maintenance of a policy of standardization is essential to the success of trade unionism, and that if there are two unions in the same craft, it is much more difficult to maintain such a policy. It is, of course, for this reason that the American Federation of Labor has from the beginning opposed dual unionism. There are two unions in the carpenter's trade. The elimination of the other union is therefore to the interest of the members of the surviving union. And if this union is stronger, as its survival would indicate, then the elimination of the weaker union is also to the interest of its own members, provided they are permitted to become members of the surviving union on terms which do not deprive them of their benefits. And such terms were usually granted by the Brotherhood. Of course, it would be better if the elimination of the weaker union could be brought about by peaceful means; but even if a struggle has to take place, there is unquestionably still a gain, provided the rival union is eliminated and the surviving union is not greatly weakened by the struggle. These conditions also appear to have been met in the Brotherhood's dual-union disputes. While it may be true that the Brotherhood would have developed faster if it had not been for these disputes, the fact remains that during and following them it steadily increased in membership. The Brotherhood has been

unusually successful in maintaining its policy of standardization; and the elimination of rival unions, whose presence hampered the enforcement of this policy, was without doubt an important factor in this success.

It is a more difficult matter to arrive at a definite conclusion regarding the effect upon the Brotherhood of the demarcation disputes. The issues involved are not so clear cut nor are the results so well-defined. To illustrate: metal doors, sash, and trim begin to take the place of wooden doors, sash, and trim. The carpenters and the sheet-metal workers both claim the work. The carpenters are victorious. What have they gained? The right to do the metal work, of course, but is that a real gain? Some are of the opinion that it makes little difference who does the work provided the standard rate is maintained.⁶ Of course, maintenance of the standard rate is to the advantage of the carpenters, since employers will not be so anxious to engage workers other than carpenters; but when two unions are concerned, added difficulties are involved in maintaining the standard rate. Furthermore, even granting that the rate is maintained, the fact is not altered that if the sheet-metal workers obtain the metal work which has taken the place of woodwork, the amount of possible carpenter work has been decreased, and, the number of carpenters remaining the same, unemployment for carpenters will result to the extent to which that work has been decreased. It is, therefore, to the interest of the carpenters to obtain jurisdiction over work that

6. "Once the special rate for the disputed process was authoritatively determined, the individual employer might engage any workman he pleased at that rate, whether he belonged to the Amalgamated Society of Engineers or to the humbler United Association of Machine Workers, or even to the National Laborers' Union. . . . The Trade Unionists, on the other hand, would secure their fundamental principle of maintaining the Standard Rate." — Webb, *Industrial Democracy* (1920), pp. 525, 526.

has displaced carpenter work; and to the extent that they obtain such jurisdiction, to that extent have they gained. It is impossible definitely to state the extent to which the Brotherhood has been able to retain and extend its control as a result of its demarcation disputes. But in speaking of the evidence submitted to the Board of Awards in the metal-trim controversy, President Hutcheson said: "The preponderance of evidence submitted in favor of the carpenter, showing that at least ninety per cent of this material had been erected by our Organization, apparently had little weight."⁷ At any rate, the carpenters were seldom worsted.

Another gain to the Brotherhood from its jurisdictional disputes is suggested by President Gompers:

None will dispute the fact that with you I deeply deplore the jurisdictional controversies, and particularly when they assume an acute and often bitter antagonistic attitude; but that they have developed a high order of intelligence in discussion among our unionists, keen perception in industrial jurisprudence, is a fact which all observers must admit. That these acquirements and attainments will be of vast advantage in the administration and judgment of industrial affairs, no thinker dare gainsay.⁸

The Brotherhood has paid a heavy price for its part in these disputes: hostility on the part of the employers, distrust on the part of the public, bitterness on the part of other unions, and the expenditure of large sums of money. Yet it is our conclusion that despite this great cost the Brotherhood is stronger as it stands today than it would have been had it not striven for the ends which were the goal of these controversies. We realize that the future may not bear out this conclusion. While at the present time the union is able to function, and to function well, despite the unfriendliness of many employers, of certain unions, and of some sections of the

7. Proceedings, U. B., 1924, p. 38.

8. Proceedings, A. F. of L., 1905, p. 23.

general public, the time may come when it will sorely need the sympathy and coöperation it has lost. If that time ever comes, the Brotherhood will have to pay a further price, and the balance may be on the loss side.

The fact that the Brotherhood has enjoyed a net gain as a result of its jurisdictional disputes does not of itself justify its making gains in this way. The Brotherhood has been criticized on all sides for its uncompromisingly selfish attitude. One author, in speaking of the quarrel between the Brotherhood and the Amalgamated Wood Workers, said:

The conclusion then seems evident, namely, that the crux of this fight has not been one for principle, in which the welfare of the workmen has been the dominating factor, but that it has been actuated by the personal element. The conflict has been a long, wasteful struggle that has been injurious to the cause of organized labor, and has benefited none.⁹

Nevertheless one can hardly pass judgment on the Brotherhood without passing judgment on the whole trade-union movement. In formulating a judgment the underlying basis of trade unionism must be borne in mind. It is well put by Hoxie:

The aim of the union is primarily to benefit the group of workers concerned, rather than the workers as a whole or society as a whole; its theories which attempt to explain the determination of wages, hours, conditions of employment, etc., are not general but primarily group theories. . . . The principles of action which it lays down are primarily group principles and its economic policies, demands and methods are primarily intended to protect and benefit the group of workers concerned.¹

It would be going beyond the scope of the present paper to pass judgment upon this trade-union theory. Society as a whole has probably not benefited, other trade unions have been badly treated, and the whole

9. Deibler, *The Amalgamated Wood Workers' International Union of America*, 1912, p. 190.

1. Hoxie, *Trade Unionism in the United States*, 1919, p. 282.

trade-union movement has suffered; but the Brotherhood's policy has been in entire accord with trade-union principles. That the Brotherhood has had in mind its own interests above everything else is perfectly clear. This President Hutcheson plainly stated when he said: "I want to say if I am to blame for that Board [National Board for Jurisdictional Awards] not functioning, it will be because of my zealousness to protect the jurisdictional claims of our organization."²

We cannot conclude this discussion without referring to one phase of the Brotherhood's jurisdiction policy which is quite indefensible from any point of view. Several times the Brotherhood has agreed to arbitrate, but upon finding the decision unfavorable, has refused to accept the award. No policy bordering on bad faith can be defended on any ground. The Brotherhood might far better have refused to arbitrate in the first place. The fact that other unions have likewise been guilty in no way excuses the Brotherhood.

Everybody recognizes that it would be a good thing to get rid of the warfare connected with jurisdictional disputes. The Brotherhood itself would gladly eliminate the disputes as such, provided only that it could get what it wanted in some other way. Before the carpenters can make successful use of any other plan, a change must take place in either of the two following ways: the Brotherhood must recede from its present position of defending its jurisdictional claims at all costs — in other words, must be willing for the sake of others concerned to give up what it feels rightly belongs to the carpenters; or else the Brotherhood must realize that it is to its own interest to eliminate jurisdictional disputes even at a sacrifice, that is, that it must do so for its own sake. Those who would abolish

2. Proceedings, U. B., 1920, p. 460.

jurisdictional warfare among the carpenters must therefore, in our opinion, first convince them that their own interests demand such a change; for that they would ever abolish the struggles in order to benefit others seems, in the light of their history, highly improbable.

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THE SEA LOAN IN GENOA IN THE TWELFTH CENTURY

SUMMARY

Introductory: connection between the ancient Greek and Roman sea loan and the medieval Genoese type, 495. — Position of the sea loan before the Civil and Canon Law, 499. — The *bona fide* sea loan, 501. — Interest rates charged, 505. — Time and method of repayment, 507. — Security required, 508. — The *pignus* type of sea loan, 510. — Its importance as an addition to the credit machinery of Genoa, 511. — As a means of speculation, 518. — The usury-evasion type, 520. — Operation of the insurance principle, 523. — Relationship of medieval sea loan and modern bottomry bond, 526. — Conclusion, 528.

THE sea loan, or *fœnus nauticum*, is one of the most ancient forms of contractual relationship between individuals for the purpose of providing the entrepreneur with the funds of the capitalist. Developed as it was by the mutual interest of the possessor of idle funds who desired the most lucrative possible investment, and of the merchant who could see opportunities for immense profits in trading ventures by sea, if only he could secure the funds to provide a cargo, the sea loan has shown a most remarkable tenacity in use, and in one form or another has endured from the days of classical antiquity until modern times. Indeed, some writers, gifted with a strong sense of romance and as strong an imagination, have placed the origin of the sea loan back another half millennium in India. In a speech by Demosthenes of about 340 B.C. mention is made of a sea loan which resembles in a striking way the sea loan as it was used in medieval times, and even bears considerable likeness to the modern bottomry bond.¹

1. See Walford, *Cyclopedia of Assurance* (London, 1871), i, 335, for a comparison of an ancient Greek sea loan with a modern bottomry bond.

The remarkable similarity in type of contracts used in the trade of the Mediterranean in periods separated by more than a thousand years naturally raises the question whether the sea loan continued in use uninterruptedly from the days of Demosthenes to the Crusades, or whether the awakening economic life of the western Mediterranean called forth a commercial device similar to that in use at the time when about the same stage of economic development had been attained in ancient Greece.

Fortunately there exists sufficient documentary evidence to answer the question with some degree of accuracy. The sea loan in use at the time of the height of Roman commerce was essentially the same as that in use in Greece at the time of Demosthenes. While no actual contracts are now in existence which date from Roman times, the references to the sea loan which occur in the early Roman law and in the Code and Digest of Justinian,² are sufficiently explicit to establish the similarity of the Greek and Roman types. Since the commercial life of Greece and of Rome is separated by no such hiatus as that which stretches between Roman civilization and the renaissance of the Italian commercial towns such as Genoa and Venice, there seems no reason to doubt that the Roman sea loan was a direct descendant of the type in use in Greece several centuries before. The references to the sea loan in the *Basilica* show that it was used in the Byzantine Empire.³

Since the Italian maritime cities, such as Venice and Genoa, had carried on a considerable trade with Constantinople, from the time of their very origin as medie-

2. See W. Ashburner, *The Rhodian Sea Law* (Oxford, 1909), p. ccxvi.

3. The *Basilica* was compiled about A.D. 867-880. For reference to its provisions in regard to the sea loan, see Walford, *op. cit.*, i, 337.

val commercial centres, it seems probable that there exists a direct historical connection between the ancient Greek and the medieval Italian forms of the sea loan, through the medium of Rome and the Byzantine Empire. It was, however, the great revival of commerce following the Crusades which brought back the sea loan to the western Mediterranean, where it must have died out along with the commerce which had occasioned its use.

The notarial records of the commune of Genoa probably afford a greater number and variety of sea loans of the twelfth and thirteenth centuries than are available in the archives of any other city of the period.⁴

4. These records consist in the main of the acts of the Genoese notaries who drew up the contracts for the parties to the agreement. The notaries were public officials of the commune of Genoa. They usually stationed themselves in the habitual meeting places of the merchants, particularly when the sailing of a ship or convoy of ships was in prospect. On these occasions many contracts would be drawn up in a single day. On other occasions the notary drew up the copies of the contract in the home of the merchant who was a party to the contract. All these transactions were written down by the notary, and copies given to the parties to the contract. The original copy of the contract was filed in the public archives of the city. The acts of the notary Giovanni Scriba are the earliest that have been preserved down to the present time. They cover the period from 1154 to 1164. This notularium has been edited in the *Historiae Patriae Monumenta*, and is generally known as *Chartarum II*. The records of the notaries following Giovanni Scriba, for a period of more than one hundred years, have been photographed by Professor E. H. Byrne of the University of Wisconsin. The photostatic copies of the documents of this period are now on file in the library of the University of Wisconsin. They have not yet been edited. References to the unpublished records are here made to the notary to whom the volumes are ascribed in the *Archivio di Stato di Genoa*, and to the numbered folios, or to the unnumbered reverse, as f. 52 v.

The period covered in this discussion includes the first six years of the thirteenth century, partly because they naturally belong to the period of Genoese trade which was brought to an end by the expulsion of the Genoese from the trade with the Byzantine Empire following the Fourth Crusade; but principally because the material presented here which deals with the Genoese sea loan is intended to parallel the work of Byrne on the Genoese *Societas* and *Accomendatio*, which covers a like period. His monograph appeared in the *Quarterly Journal of Economics*, Vol.

This form of contract seems to have been used throughout the entire field of Genoese maritime endeavor.⁵ Examples of sea-loan contracts which provided funds for trade with Constantinople, Syria, North Africa, Egypt, southern France, Sicily, Sardinia, and Corsica, are common.⁶

It was not only the Genoese merchants, however, who found it convenient to revive the use of the sea loan in the western Mediterranean. The sea loan was used also in Venice, Marseilles, Barcelona, and very likely in all the other cities of the Mediterranean coast in which there was an active trade.⁷

We find that throughout the area of commerce served by the Italian, Provençal, and Catalan merchants of the sea, the ancient sea loan was revived in substantially its original form; and altho in the course of decades of use it was adapted to the changing demands of a rapidly expanding commercial activity, yet it always retained some of the ancient forms and phrases, in order that the law might treat the new development merely as a form of contractual relationship sanctioned by custom, hardened into law.

The sea loan was destined to be of the greatest importance in the development of loan contracts in Genoa, for at the time when it came into use it represented the sole type of contract for the loan of capital funds at in-

xxxi, November, 1916, under the title, "Commercial Contracts of the Genoese in the Syrian Trade of the Twelfth Century."

A very few references are to contracts which were executed as late as 1215. These are used, however, merely to indicate the trend of events after the twelfth century, in order to compare or contrast that century with the period immediately following it.

5. For an account of Genoese trade during the twelfth century, see E. H. Byrne, "Genoese Trade with Syria in the Twelfth Century," in *American Historical Review*, Vol. xxv, No. 2.

6. See Notaio Guglielmo Cassinese, ff. 57 v, 107, 203, and Notaio Lanfranco, registro I, ff. 132 v, 90, 75 v, 77.

7. For numerous citations of sea loans in these cities, see Goldschmidt, *Handbuch des Handelsrechts* (Stuttgart, 1891), pp. 347-353.

terest which was not illegal. Usury was illegal at Canon Law, and its position before the Civil Law was uncertain at best. But the sea loan offered an opportunity to bring a loan at interest under the protection of the law. This protection was of maximum importance to the lender, since it assured him of the return of his funds, barring loss at sea; and it was of equal importance to the borrower, since, without the assurance to the lender of the legal enforcement of the loan contract, the temporary transfer of capital funds from lender to borrower was hardly possible.

The sea-loan contract is frequently referred to by the notaries as a *mutuum*.⁸ The use of this term demonstrates the scrupulous care of the notaries lest the sea-loan contract should come within the purvey of the anti-usury laws. A *mutuum* was technically the loan of a *consumptible* or *fungible*, with no provision for the payment of usury.⁹ A loan contract which provided for the repayment of a loan together with a sum in addition to the principal was a *fœnus*, and according to Canon Law a *fœnus* was illegal. However, the *fœnus nauticum*, or sea loan, occupied a unique legal position, since the peculiar risk of loss which the lender in a maritime loan necessarily underwent was generally considered sufficient justification for the repayment of something more than the principal.¹ It is unlikely that

8. Not. Gugl. Cass., pp. 222 v, 242, 246; Not. Lanfr., reg. II, f. 12 v.

9. For an explanation of *res fungibles* and *res non fungibles* and their importance to the medieval interest doctrine, see O'Brien, *An Essay on Medieval Economic Teaching* (London, 1920), p. 178.

1. The *fœnus nauticum* seems to have been regarded as legal according to Canon Law, at least until the middle of the thirteenth century. At that time (1227-1234) it is referred to in a decretal of Gregory IX (lib. V, tit. xix, c. xix) which has aroused considerable controversy. The decretal apparently forbade the *fœnus nauticum* as usurious. However, most authors and commentators on Canon Law seem to believe that a *bona fide* sea loan, in which the bonus paid on borrowed funds was directly proportionate to the maritime risk involved, never be-

there had ever been a definite ruling by the ecclesiastical authorities which had specifically established the legality of the *fœnus nauticum*.² Rather, the sea loan depended, for such legal status as it had, upon the supposition that it was not a *fœnus* at all, and that any sum which was paid in addition to the principal was not usury, but an insurance premium instead. In consequence, the anxiety of the lender that there should be no slightest taint of usury about the contract can be readily appreciated. As a result of this apprehension on the part of the lender, the term *fœnus nauticum*, which was employed in Roman times, was never used in the Genoese contracts, so far as the writer is aware. Instead, the term *mutuum* was used, in order implicitly to deny the usurious character of the contract.

On account of the fact that the sea loan was became illegal at Canon Law in spite of this decretal. Some commentators base their opinion on the belief that the text of the decretal in its present form is corrupt, and that the construction of the rest of the decretal would call for the insertion of the word *non* in front of the phrase *est censendus*; hence a proper transcription would make the decretal read, "Naviganti vel eunti ad nundinas . . . usurious *non* est censendus," so that, instead of prohibiting the sea loan, it would be specifically exempt from the operation of the anti-usury laws. See Ferrari, *Bibliotheca Canonica Juridica Moralis Theologica* (Rome, 1885-1892), v, 757-771.

Certainly there were sea loans made after the time of Gregory IX (Schaube, *Handelsgeschichte der Romanischen Völker des Mittelmeergebietes bis zum Ende der Kreuzzüge* [Munich, 1906], p. 112). Just as certainly the sea loan declined in importance during the period following the decretal; but this was probably due rather to the development of pure marine insurance than to any respect for papal decrees, however authentic. Altho Schaube states that the sea-loan contracts of this later period were disguised as transactions in exchange, this fact proves nothing, for sea-loan contracts had been so disguised for decades before the time of this decretal.

2. Altho usury as such was categorically forbidden by the ecclesiastical authorities, yet it was clearly recognized that in connection with the lending of funds a recompense might be claimed by the lender, due to certain extrinsic titles, one of which was risk, or *periculum sortis*. Altho this particular title was in dispute after the decretal of Gregory IX, it was probably recognized before that time, and its general validity was established as late as 1645. O'Brien, *op. cit.*, pp. 192, 193.

sidered legal at both Civil and Canon law, the original form of the sea-loan contract was frequently altered in order to make possible its application to loans which were essentially of a different nature from the type which the old form of the sea loan had been designed to serve. This circumstance gave rise to numerous variations in form. The contractual forms differed in detail with almost every transaction. Nevertheless, it is possible to separate the vast number of contracts into several main types.

Three types of the sea loan may be distinguished, according to the purpose for which the funds loaned were to be used. The first type may be called the original, or *bona fide*, type of sea loan, the second the *pignus* type, and the third the usury-evasion type.

I

The original sea loan was a combination of loan contract and insurance contract, which was admirably adapted to the needs of a rather primitive sea-borne commerce.³ Two purposes were served by this form of contract. In the first place, capital funds could be loaned at interest without running counter to the laws against usury; and secondly, the borrower of the capital

3. Not. Gugl. Cass., f. 37 v, of the year 1191, is an example of this type:

Confitetur Obertus Cavapapa se cepisse in mutuo a Bernitione Scoto libras 150. Et Baudo Rubeus libras 125. Et Bertolotus Smeratus libras 125. Unde ei dare promittunt bisantios III et quartam Saracenaes mundos ab omne dricto et iusti ponderis per libram ad mensem I proximam exquo fierint ultramare eudenti imprimis in Sardiniam pro carricari et inde ultramare. Salva eunte nave vel maiori parte rerum navis que parati sunt ire. Et si forent disturbati que non moverentur pro ire in predicto viatico aliqua iusta impedimenta que disturbarentur inde ad mensem promittunt reddere predictas libras. Sub pena dupli insolidum abrenunciacione iuri solidi et omni iuri. Testes Alexander Tuesellus. Willelmus filius Bonisenioris. Albertus de Nonatar. Et pro pena et sorte navem et carcsum navis ei stipulanti obligant sub pena dupli Bertolotus. In ecclesia Sancti Laurentii ea die. Jurant et ita attendere rebus quantum et cum et sint vel assent.

funds obtained what amounted to insurance against maritime disaster involving his borrowed capital. In the ordinary sea loan of this type, the borrower was a Genoese merchant who needed funds to buy a stock of goods for use in trading in the East, or who intended to use the funds borrowed for the direct purchase of wares in the East. The borrower agreed to repay the funds which were loaned to him, plus an additional amount, which was actually interest upon the loan, but which, according to a legal fiction, was merely a bonus or premium paid to the lender of the funds because of the peculiar risk incident to trading at sea. This concept of the bonus paid for the use of the capital funds as an insurance premium rather than as usury was a reasonable one, since the borrower was not under obligation to repay his loan if the goods in which the funds were invested were lost at sea. The sea loan was carefully phrased so that the lender of the funds underwent the maritime risk of the venture, and he was assured of the repayment of his capital only if the ship which carried the investment overseas escaped the perils of the sea. The customary phrase used to express the contingency principle in the contracts was *sana eunte nave vel maiore parte rerum ipsius nave*. In some cases the borrower of the funds was the owner or part owner of a ship, and the proceeds of the loan were for use in outfitting his ship, or paying the advance wages of his crew, or for any of the other expenses which a ship owner has to meet.⁴ Whether the borrower was a merchant or whether he was a ship owner, the terms of the sea-loan contract were not essentially different.

The general prejudice against the taking of usury was so strong that every effort was made in drawing up the contracts to conceal the rate of interest charged on the

4. Not. Lanfr., reg. I, ff. 93 v, 99 v; and Not. Gugl. Cass., ff. 151 v, 107, 107 v.

loan. The greatest pains were also taken by the notaries in drawing up the contracts for sea loans, or indeed loans of any sort, to avoid the use of the term usury. Sometimes the sum paid for the use of borrowed funds was called *proficuum*,⁵ and at other times it was referred to as *lucrum*.⁶ Often the interest rate on the loan is stated as *tribus quatuor* (four for three), or as *quatuor quinque* (five for four),⁷ representing in the first case a loan at thirty-three and one third per cent, and in the second case, one at twenty-five per cent. Infrequently the expression *per centum* was used.⁸ Occasionally the interest rate is calculated upon the basis of *solidi* or *denarii per libram*.⁹ In the majority of cases the notaries avoided the use of any term at all which might be interpreted as referring to usury.

After the early period of the sea loan it is unusual to find a contract with a definite interest rate stated. Indeed the contract was not usually drawn so that the borrower was to repay the same sort of coin as that in which the money was loaned. If the amount to be loaned was stated in Genoese pounds, which was the customary standard of value, the terms of the loan provided that the loan should be repaid in the money of the country in which the funds borrowed were to be used in trade.¹ The object in this provision for the loan

5. For example, Not. Lanfr., reg. I, ff. 164, 183 v.

6. For example, Not. Gugl. Cass., f. 264 v.

7. For example, Chartarum II, nos. 452, 708.

8. Not. Lanfr., reg. III, f. 64.

9. Not. Gugl. Cass., f. 264 v.

1. In the case of the Syrian trade, the loan was almost always to be repaid in Saracen besants (Not. Lanfr., reg. I, f. 91 v; Not. Lanfr., reg. II, f. 35); in the North African trade the coin of repayment was the besant *masumotinus* or *miliarensis* (Not. Gugl. Cass., f. 98 v, f. 107); in the trade with Sicily it was the ounce of gold *tarrenti* (Not. Lanfr., reg. I, ff. 81 v, 90); with Marseilles the coin was the *regalium coronatorum* (Not. Gugl. Cass., ff. 154, 176 v); while in the trade with Constantinople the *perperrus* (*yperperus*) was the most frequently designated currency for repayment (Not. Gugl. Cass., f. 57 v). These coins were the commonest units of repayment, but other sorts are mentioned.

of money of one sort and the repayment of another was to render obscure the amount of the premium paid, so that the large amount would not create the suspicion that usury had been charged in addition to insurance. At other times the interest rate is concealed, in that the amount of the funds loaned is not definitely mentioned, but, instead, the contract merely reads that the borrower has received an indefinite amount of the goods or money of the lender,² and is to repay so many Genoese pounds. The fact that, wherever the amount of the sum loaned is not mentioned, the repayment is to be in Genoese pounds, indicates that the repayment in terms of some foreign coin in the other case was not merely for the convenience of the borrower in making repayment.

In the case where the sum loaned is not definitely stated, the determination of the interest rate is, of course, impossible; but in the case where the loan is to be repaid in some foreign coin, altho made in terms of Genoese money, the determination of the rate of interest is still possible. If we were compelled to assign a constant value to each coin used in the transaction, the results obtained would be of questionable value; for the problem of fluctuation in the rate of exchange between the moneys of different countries, which is caused now by inflation of the currency, was caused in those days by the difference in purity or weight of coins minted at different times, altho designated by the same name. Fortunately, however, in the later form of sea loan it was usually necessary to specify in the contract itself the approximate exchange value of the two moneys used in the transaction.³ In

2. The expression used was *tantum de tuis rebus*. See Not. Lanfr., reg. I, ff. 17, 38 v, among many others.

3. See Not. Gugl. Cass., ff. 224 v, 202 v, 304, 310; Not. Lanfr., reg. I, ff. 17, 26, 81.

this way, wherever the exchange rate is specified, and in those cases where the interest rate is definitely stated in one way or another, it is possible to arrive at the rate of interest which was charged for the different voyages.

In general, the amount of the interest charged varied with the length and character of the voyage undertaken, rather than with the actual time for which the money was used by the borrower. Possibly this was the case in order to retain the color of a venture loaned upon the sea, so that any interest charged might be considered as due to risk rather than to usury. As a result there tended to be a modal rate of interest for each trade.

The interest rate to Syria was usually about fifty per cent.⁴ To Sicily the rate was customarily between twenty-five and thirty per cent,⁵ to North Africa from twenty to thirty per cent,⁶ and to Sardinia or Corsica from ten to twenty per cent,⁷ with a similar rate to the sea towns of southern France and the small Italian ports near Genoa.⁸ There are a few cases of sea loans in which no interest rate is paid, but, instead, a share of the profits is given. This practice, however, was not common, and the terms of these contracts are usually

4. The rate to Syria is 50 per cent in Not. Lanfr., reg. I, ff. 93 v, 149, 155 v, 182 v, and in Not. Gugl. Cass., f. 48 v, and others. In Not. Lanfr., reg. I, ff. 141 v and 142, it is 42½ per cent. In Not. Gugl. Cass., f. 37 v, it is 62½ per cent; but this last contract gives the right to trade in Sardinia also.

5. The rate to Sicily in the contracts recorded in Chartarum II is almost invariably 25 per cent. In Not. Lanfr., reg. I, f. 108 v, the rate is 43 per cent; in Not. Lanfr., reg. I, f. 122, it is 34 per cent; and in Not. Lanfr., reg. I, f. 90, 50 per cent.

6. For the interest rate for the voyage to Ceuta, Garbo, Tunis, Bougie, etc., see Not. Lanfr., reg. I, ff. 3 v, 77, 99 v, 167 v, 184 v, 197, 197 v.

7. For the rate to Sardinia and Corsica, see Not. Lanfr., reg. I, ff. 25, 65 v, 75 v, 77, 183 v, 184 v, 189.

8. For the interest rate to maritime cities of southern France and the small ports near Genoa, see Not. Lanfr., reg. I, ff. 32 v, 53 v, 62, 163.

not very clear.⁹ Occasionally there is no provision at all for payment of a return on the funds loaned.¹ In this case probably the amount stated in the contract is really greater than the borrower received, and the interest is provided for in that way.

The lenders of the funds in the sea loans were usually exceedingly careful to see to it that their funds did not lie idle or lose any accrued interest. When funds were loaned to merchants or mariners who were to be gone for considerable periods, it was usually provided that the funds loaned should be repaid, not in Genoa, but in the country to which the merchant was going, to the certified agent (*certo misso*) of the lender.² In this way the man who loaned funds to a merchant going to Syria would obtain an interest rate of perhaps fifty per cent on the outward journey, and would likewise be able either to loan the money to a merchant in Syria and make a similar return on his money for the homeward voyage, or he would be able to make a profit on the goods which he or his agent purchased with his funds in Syria, and later sold in Genoa. When the funds loaned were to be employed for carrying on trade with neighboring cities or districts, such as Marseilles, Montpellier, Corsica, or Sardinia, provision was usually made for repayment after the return of the trader to Genoa.³

9. In Not. Gugl. Cass., f. 325, the parties to the contract agree that for the use of 5 pounds of money of Genoa, the borrower is to pay four fifths of whatever profit he shall make on the money during a voyage to Bougie. This contract seems quite clear and definite in its terms.

1. For example, Not. Gugl. Cass., f. 293.

2. For example, Not. Gugl. Cass., f. 265; Not. Lanfr., reg. I, ff. 93 v, 142, 145 v.

3. Thus if the sea loan were made for a journey to Syria it would be repaid there (Not. Gugl. Cass., f. 57 v; Not. Lanfr., reg. I, f. 93 v). The same principle held for sea loans to Constantinople (Not. Gugl. Cass., f. 57 v), Garbo (Not. Gugl. Cass., ff. 98 v, 183 v), Bougie (Not. Gugl. Cass., ff. 107, 183 v), and indeed to all other distant ports. The contrary was true if the loan were to be carried to some neighboring city or country, as Montpellier (Not. Lanfr., reg. I, f. 132 v), or Sardinia (Not. Lanfr., reg. I, f. 75 v).

It was probably more convenient to have the funds payable in Genoa than elsewhere, and funds were repaid in other cities only in those cases in which the amount of the interest was enough to compensate the lender for the trouble and expense of arranging for an agent to receive payment for his account in a foreign city, and for the cost of lending or otherwise investing the proceeds of the loan so that they could be returned to Genoa in a reasonable length of time.

The sea loan was undoubtedly used in many instances as an instrument for carrying on transactions in foreign exchange. The provision in great numbers of such contracts for payment in a foreign port, and frequently in a foreign currency, might easily lead to the belief that one of the major purposes of the sea loan was to furnish a means of remitting funds without the necessity of sending bullion. This possibility seems strengthened by the fact that the bill of exchange which was used in the commerce of the Mediterranean undoubtedly borrowed the phraseology of the sea loan in large measure.⁴ However, it seems more probable that the provision for repayment in the outport was in order to avoid the loss of interest on funds loaned, and that the provision for repayment in foreign coins was in order to cloak the essentially usurious character of the contract.

The period of grace that was allowed the borrower of the funds after arrival at the place where repayment was specified varied from eight to sixty days. The shorter period for repayment applied to the loans for short voyages mentioned above, while the longer period applied to the more extended voyages to Syria, Constantinople, and Alexandria. For short voyages the loan was payable within fifteen days after arrival in port,

4. Goldschmidt, *op. cit.*, p. 412.

while one month was allowed for the longer voyages.⁵ The purpose of this waiting period between arrival at destination and time of repayment was to permit the merchant to sell his goods so that he could provide himself with the means to repay his loan.

In a few instances, repayment was specified at a definite calendar date, instead of so many days after arrival of the ship in port.⁶ In these cases there is some doubt as to whether the contract is a *bona fide* sea loan, since the essential feature of the true sea loan consists in making the repayment contingent upon the safe arrival of the ship carrying the commodities in which the loaned funds were invested. When payment must be made at a certain date, it is obvious that the clause providing for repayment only in case of the safe arrival of the invested capital is nullified. The matter is not clear, however, since the clause for repayment at a specified date may have been inserted in some cases for greater definiteness, and in other cases to provide for a longer period between the time of arrival and the time of repayment. The courts may have refused to enforce payment of the loan if the investment suffered marine disaster, in spite of the provision of a definite date for repayment.

During the early period of the development of Genoese trade, the security for the funds loaned in the sea loan was provided for in a variety of ways. The most characteristic form of security was the general obligation of all the possessions of the borrower. That this was not merely a form, as it perhaps became later, but was actually legally enforceable is indicated by the fact that very frequently the wife of the borrower was

5. For examples of the fifteen-day period, see Not. Lanfr., reg. I, f. 183 v, a sea loan to Sardinia, and *ibid.*, f. 184 v, to Corsica. See Not. Gugl. Cass., ff. 315, 316, for period of one month on sea loans to Ceuta.

6. For example, Not. Lanfr., reg. I, ff. 81 v, 83, 142.

made a party to the loan, and was required to renounce certain legal rights which were provided under the Roman law.⁷ The purpose in doing this apparently was to make the right of action of the creditor absolute over the property of the borrower, as it evidently would not have been if his wife had not been a party to the loan, since she could have maintained her dower rights in her husband's property.⁸ This is shown by the fact that when the wife is made a party to the loan, in order that there may be no question of coercion by the husband, male members of her own family very often certify that she agrees to the contract by their advice.⁹ Sometimes in these cases the borrower of the funds states that his property has no prior claims against it.¹ In some cases, the surety given for repayment is real estate,² and in other cases, friends of the borrower are his sureties for repayment of the loan.³

In the period of the wider development of the commerce of Genoa, a considerable change took place in the nature of the security offered. By the end of the thirteenth century the typical borrowers were no longer men who could obtain small capital funds only by mortgaging the private possessions of themselves or of their family. Nor was it usually necessary for the borrower to have friends act as personal sureties. The borrower of this later period was usually a merchant whose business credit was good. He was the possessor of a ship, or shares in a ship, or of a stock of wares, which comprised the capital of his business. It was

7. Chartarum II, 265, 333, 438, 440, 445. All these prior to 1158.

8. According to the *Lex Julia* and *Senatus consultus Velleianum*.

9. Chartarum II, 445, 516, 519, 550. All these prior to 1159.

1. Ibid., 438 (1157).

2. Ibid.

3. Ibid., 685, 709, 833, 926. All these prior to 1161.

these shares in ships⁴ or the goods⁵ of the merchant which were hypothecated; and in case of default, the rights of the lender of the funds over this type of property seem to have been well enough established in the law by this time, so that the older custom of the consent of the wife and her relatives to the loan was no longer necessary.

II

The development of the *pignus* type of sea loan marks an important step in the development of the loan contracts used by the Genoese, since it represents an original contribution to the available legal credit instruments of the time.⁶ The first type of sea loan which

4. For examples of ships or shares in ships pledged as security for loans, see Not. Lanfr., reg. I, ff. 93 v, 99 v; and Not. Gugl. Cass., ff. 151 v, 107, 107 v., among scores of others.

5. For examples of goods pledged, see Not. Gugl. Cass., ff. 98, 112 v, 153, 154, 179, among a large number of others.

6. As an example of a simple form of the second type of sea loan, a contract (Not. Gugl. Cass., f. 212) of the year 1203 may be taken:

Confitetur Guglielmus de Astur se portare jussu et voluntate sui patris Hugonis de Astur in accomendatione a Guglielmo Bello de Castello cannas LVIII ad cannas ianue, de telis de Rens que constant solidi VIII per canna et cannas XLI de Stanfortis Albis. Et constant per canna solidi XIII et constat supratotum libras L et solidi XI et supra quas res debet vendere ultre mare se pagare voluntate predicti Guglielmus ultre mare debisantis LXXII minus Solie caratulas III mundos ab omni drictos et avariis et de justo peso. Sana eunte nave de donna vel maiori parte rerum ipsius navis ultre mare et hoc facit ei pro libram XXV denarius ianue quas dictus Guglielmus Bellus confitetur se recepisse a predicto Guglielmo de quibus vocat se quietum et pagatum (ab eo) abrenunciens exceptioni nonnumerate peccunie. Residuum quod suprauerit (in predictis rebus) in solutione predictorum bisantiorum debet et promittit ei implicare causa mercandi bona fide. Et quod residuum promittit ei ianuam aducere implicatum vel si mutaret viaticum promittit ei (ianuam) mittere cum testibus in potestate eius vel sui certi missi proficuum quod deus dederit cum capitali et de quo residuo debet expendere et lucrari per libram cum aliis quas portat et de quo residuo debet habere quartam proficui. Testes Villanus de Sancto Georgio Johannis Velutus, Henricus de Guiberto actum ea die et loco et hora.

For other examples of this second type, see Not. Lanfr., reg. I, ff. 91 v, 122, 141 v; Not. Gugl. Cass., ff. 1 v, 62 v, 69; Not. Lanfr., reg. II, ff. 29, 34 v.

was used in Genoa, and which has been described above, was adapted from the sea loan used in Roman times, and indeed shows scant modifications from the earliest sea loan on record, mentioned in the speech by Demosthenes, to which reference has already been made. In contrast to this original or primitive type of sea loan, the second type is of quite a different nature, and resembles the older form, of which it is an adaptation, principally because certain of the forms and phraseology of the original type are preserved in order to obtain the favored position of the older type of sea loan before the law.

The purpose of the second type of loan is quite different from that of the first type. In the original sea loan the purpose of the loan contract was to provide funds for a merchant who was going to undertake a trading venture by sea. In the second case, the purpose of the loan was to permit a merchant who was going on such a venture to loan funds to a merchant who was not engaged in trading by sea at all. By means of the clever way in which the sea loan was inverted it was possible to evade the laws against usury, not only for loans for sea commerce but likewise for trading upon the land.

The second type of sea loan is easier to understand if we assume that the borrower was always a merchant who either purchased goods from traders who had obtained woolen cloth or other goods from England, France, or Belgium, or else had purchased these wares directly, and that the lender was always a merchant who was about to undertake a trading voyage to Syria, Sicily, Alexandria, or elsewhere. This assumption is a reasonable one, for such was the usual case. The merchant who needed cash always gave a pledge of goods (*pignus*), whose value was supposed to be at least equal

to the amount of the loan, plus interest. The terms of the loan provided that the lender was to take the pledge into his custody, and if the loan was not repaid upon arrival at the port to which the lender was going, then the pledge was to be sold by the lender, and the amount of the loan plus the stipulated interest was to be retained by him. Any superfluity was to be returned to the borrower of the funds, who was the legal owner of the pledged property.⁷ If there was any deficiency in the amount obtained from the sale of the mortgaged property, it was to be made good by the borrower when the lender returned to Genoa.

On the face of it, the sale of the pledge seems to be merely a contingent right of the creditor in case the debtor defaulted on the payment of loan and interest. Such a right was sometimes provided in the original type of sea loan, and possibly the right to sell any property given as a pledge for the repayment of a loan was always understood.⁸ But here the case stands quite differently, for it was generally understood that the debtor was not to repay his loan, and that the sale of the pledged property was always to take place. In some contracts it is stated definitely that the pledge is to be sold, instead of making the sale of the pledge contingent upon the non-payment of the debt.⁹ In another case the power or license to sell is formally given.¹ The conclusion is inescapable that the provision for sale only in case the debt was not repaid was not a *bona fide* part of the contract, and was kept in the contract in order to retain the greatest possible

7. See Not. Gugl. Cass., ff. 69, 95, 95 v, 208 v, for examples of pledges of woolen cloth; *ibid.*, f. 202 v, for pledge of a horse; and *ibid.*, 310 v, 311, for pledges of pearls.

8. See Chartarum II, no. 438, and Not. Gugl. Cass., f. 255, for specific authority to sell pledged property given as security in a sea loan of the original type.

9. Not. Gugl. Cass., f. 212.

1. *Ibid.*, f. 259 v.

similarity to the old type of loan, so that the interest charged on the loan would not render the contract illegal:

In those cases in which the amount received from the sale of the hypothecated goods was larger than the amount of the principal and interest of the loan, the contract usually provided that the superfluity should be invested by the merchant creditor who sold the pledge, and the investment brought back to the original owner of the goods in Genoa. The creditor did not perform this service gratis for the debtor. In return for the service rendered, he received one fourth of the profits made upon the investment, after the goods purchased with the superfluity had been sold in Genoa. The transaction which involved this superfluity was in this case apparently regarded as an *accomendatio*, and the custom followed in respect to it seems to have usually governed the proceedings. In some cases it is specifically stated that the superfluity is to be carried in *accomendatione*, and in other cases the usual terms of a regular *accomendatio* are explicitly stated.²

In a few cases the terms of the contract provide that the superfluity shall be paid to a specified agent of the borrower, which was ordinarily feasible only in case some acquaintance of the borrower was making the same voyage. If the agent is not at the outport, then the funds are to be invested by the creditor, and carried under the regular terms of an *accomendatio* contract.³ In one instance a third party is brought into

2. See Not. Gugl. Cass., f. 212, for provisions in respect to investment of superfluity, which are almost exactly the same as in the case of the *accomendatio*, altho the term is not used. Ibid., 310 v, the provisions for the investment of the superfluity are simply referred to as in *accomendatione*. For an explanation of the *accomendatio* see Byrne, "Commercial Contracts of the Genoese in the Syrian Trade of the Twelfth Century," op. cit.

3. Not. Gugl. Cass., f. 224 v.

the transaction, and takes the commercial or business risk upon himself.⁴ In this case the third party is to receive any superfluity left after the debt is paid, and in return is to pay any deficit, should the sale of the hypothecated goods not provide sufficient funds for the repayment of the principal of the debt plus the interest.

The provisions which cover the possibility of a deficit are as carefully provided for as are those covering the contingency of a superfluity. The first part of the contract almost always provided for the loan of Genoese pounds and the repayment of them in terms of some other money, frequently Saracen besants, as was true in the case of the original sea loan. The amount which was to be repaid depended upon the length of the voyage, but there is, of course, no mention of interest or usury. If the voyage was to be to Acre in Syria, for example, a sum of fifty Genoese pounds would usually be repaid by one hundred and fifty Saracen besants. Now, in the part of the contract providing that the debtor was to make up any deficit, the agreement usually stated that the creditor should be repaid ten *solidi* for every besant unpaid. The relative value of besants to pounds in the first part of the contract seems to be three besants per pound of Genoa, while in the deficit clause the ratio is only two besants per pound. This seeming anomaly actually is of the greatest advantage in ascertaining the rate of interest which is really charged, because the deficit clause contains a statement of the true exchange value of besants to pounds. The first part of the contract actually provides for an interest rate of fifty per cent. It is not necessary, therefore, to make any further provision for interest in the deficit clause, since this clause provides that the payment of the deficit shall be made, not upon the basis of

4. Not. Lanfr., reg. I, f. 220 v.

pounds unpaid, but of besants unpaid, and, since the main part of the contract provides for the payment of enough besants above the normal ratio of pounds to besants to furnish the stipulated interest, the creditor is sure of getting the full amount of interest upon his investment. Thus the lender actually received one and one-half pounds for every pound originally loaned, even when there was a deficit.

The interest or premium rate on the second type of sea loan did not differ materially from the rate charged on sums loaned under the terms of the first type, for a voyage of the same duration.⁵ It is natural that this should be true, for altho the conditions and circumstances of the two different types of loan were usually quite dissimilar, the risk of the lender and the period during which he lost the use of his funds were the same in both cases.

In a very few cases there are contracts which contain some of the essential clauses of this type, but which are not actually sea loans since they do not contain any risk or insurance clause.⁶ Probably the risk or insurance clause was not a particularly desirable part of the contract, but was retained on account of the established legality of the older forms of the sea loan. This conclusion is also substantiated by the fact that at other times the contract is called an *accomendatio* by the notaries, indicating that they were in doubt as to whether this contract was really a *bona fide* sea loan.⁷ Indeed, the first contract which can be regarded

5. For example, a sea-loan contract, Not. Gugl. Cass., f. 207, of the first type, bears exactly the same rate of interest as one of the second type, Not. Lanfr., reg. I, f. 141 v, both of which are to Syria. The same is true of two other contracts representing the first and second types, Not. Gugl. Cass., f. 255, and *ibid.*, 259 v. Many other examples might be cited.

6. For example, Not. Lanfr., reg. I, 19 v.

7. For example, Not. Gugl. Cass., f. 212.

as an example of the second type of sea loan does not purport to be a loan at all, but an actual sale of property, altho it contains the essential clauses of the second type, and in particular contains the *sana eunte* phrase.⁸ After this first case the contracts were generally drawn so as to resemble the regular sea loan as much as possible. It is likely that the *sana eunte* phrase was included at first on account of a real desire on the part of the contracting parties to shift the burden of the maritime risk on to the lender of the funds. Its later inclusion may have been due to the fact that this one use of the phraseology generally connected with the sea loan had suggested the possibility of using this form to cloak the transaction, and thus avoid the laws against usury.

The contracts usually stipulated that the loan was payable only in case the pledge was carried safely to its destination. Thus the phrase *sana eunte pignore* was used instead of *sana eunte nave*. In other cases it is definitely stated that the pledge is carried at the risk of the creditor up to the amount of the loan, while any value above that goes at the risk of the debtor.⁹ This last provision seems complicated and a little involved, but actually it meant that if the pledge were lost at sea, then the contractual relationship of the two parties to the loan came to an end, since the creditor could not obtain repayment of his loan, nor could the debtor obtain anything for the loss of the value of his pledge over and above the amount of the loan.

This second type of sea loan provided a device by which the owner of woolen cloth or other commodities was enabled to obtain funds which he could use at once, without having to wait until the round trip to Syria, Constantinople, or some other distant place could be

8. Chartarum II, no. 794.

9. For example, Not. Gugl. Cass., f. 69.

made. Of course, he might have obtained the funds necessary for the working capital of his business by selling his goods outright. But at certain times there probably existed temporary gluts of the market, so that no one was willing to take the risk of buying his commodities. By means of the new type of contract it was possible to obtain money from men who would not take the risk of buying the goods outright, lest the price for which they could be sold would not repay the capital outlay. But in the *pignus* type of sea loan the lender of the funds was protected against all mercantile or business risks, for the borrower not only pledged the goods which were to be sold, but, as has been said, agreed to make up any deficiency in case the pledged property did not meet the requirements of the loan contract. The lender was assured that the contract would be fulfilled, since the borrower, in addition to the pledged property which was to be sold, obligated all his other possessions, so that any deficiency would be made up, and even in some cases obtained a friend or acquaintance to sign the agreement with him, who thus became the surety for the repayment of the loan.¹

In some cases this form of contract really amounted to an arrangement by which the merchant in Genoa who was not engaged in the eastern trade, but who did not like to accept the prices offered for his goods in Genoa, was able to retain the legal ownership of them and thus to gain the advantage of a higher price than that which he could obtain in Genoa, while at the same time he avoided the necessity of tying up funds which he would have preferred to have available for use in his own particular business. A merchant who borrowed money in this way obviously took the chance of getting a lower price for his goods than he had anticipated.

1. For example, Not. Gugl. Cass., f. 310 v.

It is possible that the merchant who borrowed capital by means of the second type of sea loan used the proceeds of the loan in order to pay in part, at least, for the very goods which were given as a pledge. This may seem incomprehensible, since the security of the pledged goods was required as an essential condition for making the loan. The contract which was finally drawn up by the notary, however, need not necessarily be accepted as a true record of the actual sequence of events in the negotiation of the loan. What actually occurred may have been analogous to the practice of "over-certification," and the "morning loan" of the modern stock-broker serves the same end. If the Genoese merchant who borrowed capital invested it in the goods which were afterwards pledged, he was carrying on a transaction which was quite similar to the present system of buying on margin, since with very little capital of his own he was enabled to speculate in the pledged goods and obtain the advantage of any increase in price, providing his speculation was successful.²

It is possible that this form of contract sometimes became an instrument of exploitation.³ Perhaps the merchant who loaned the funds would not buy the goods offered for sale, and the would-be seller was forced to enter into such a contract in order to obtain funds at

2. In one contract (Not. Lanfr., reg. I, f. 220 v) this second type of sea loan was undoubtedly used as an instrument for speculation. In this instance a third party was brought into the contract, who agreed to pay any deficiency in the value of the pledge, in return for the right to receive any surplus value.

3. The writer is informed by Professor Selig Perlman of the University of Wisconsin, that a form of contract which was very similar in character to the second type of sea loan was in use in Russia at the beginning of the present century. The contract was not connected with marine insurance in any way, however, and the two parties to the loan contract were the manufacturer and the merchant capitalist who marketed the goods of the manufacturer on terms similar to those in the type of contract discussed here. Professor Perlman states that this form of contract frequently was the instrument by which the manufacturer was exploited by the merchant capitalist.

all. The original owner of the goods might be induced to make such an arrangement as this, for he would be assured by the lender of the funds that his goods would be sold to the best advantage and that any superfluity would be returned to him. In spite of the fact that the contract frequently provided for the sale of the goods in the presence of witnesses,⁴ there must have existed considerable opportunity for fraud and chicanery in their sale, so that the superfluity was not so great as it would have been if the goods had been fairly sold.

The development of the second type of sea loan is significant as an indication of the increasing complexity of the economic order in Genoa. Since the lenders of the funds were almost always merchants engaged in sea trade, it is positive proof of the growing importance of the merchant class as a source of capital funds in Genoa.⁵ The older type of sea loan had met the needs of commerce as long as the borrower was invariably a merchant engaged in sea trading, and as long as the capitalist took no active part in merchandising. As soon as there had developed in Genoa a considerable trade with the hinterland, it became necessary to find some form of loan contract which would provide funds for the merchants who carried on the inland commerce, and which would not run counter to the anti-usury laws. Likewise the new loan contract met the needs of those merchants who had amassed sums of money large enough to carry on their own ventures and even to loan out to others.

4. Not. Lanfr., reg. II, f. 29; Not. Gugl. Cass., ff. 95 v, 224 v.

5. Capital for overseas trade was largely supplied in the early period of Genoese trade by the land-owning and noble class. By the end of the twelfth century this class of capitalists was being superseded in importance as a source of funds for the trade, by the more purely mercantile class. See Byrne, *Genoese Trade with Syria in the Twelfth Century*, op. cit., pp. 200, 209, 211, for an account of this gradual displacement.

The development of the second type of sea loan probably served to broaden the market and to insure that goods could always be disposed of in Genoa at some sort of price. This had a tendency to bring about specialization in the trade by breaking it into at least two parts, since it was no longer necessary for a merchant who traded in Belgium or France to carry on trading operations in Syria or Constantinople also in order to find a market for his product. He could now not only dispose of it by outright sale, but if he considered the price in Genoa too low he could pledge his goods, and receive a loan on them large enough to permit him to carry on his own trading operations while the lender of the funds was marketing the pledged goods in some other part of the Mediterranean shores. In addition, the use of this contractual form must have made the turnover of capital much more rapid, and in consequence must have aided in stretching out the meagre amounts of gold and silver which were available as media of exchange.

It is worthy of note that this new form of sea loan did not replace the old, and that the two forms continued in use side by side, but serving different purposes.⁶ The second form was thus a real addition to the credit machinery of commerce in Genoa.

III

The third, or usury-evasion type of sea loan is not nearly so important as the other two types, and indeed should perhaps not be dignified as a separate or distinct type. In form it does not differ essentially from the first type. Under the third type are included all

6. For instance, Not. Gugl. Cass., ff. 252 v, 253, the first of which is an example of the first type of sea loan, the second of the *pignus* type. Both were drawn up the same day in May, 1205.

those contracts which are not true sea loans at all, either of the first or second type, but are merely contracts using the phraseology of the sea loan to cloak an ordinary loan at usury.

Almost any sea loan which provides simply for the repayment of the loan of a sum of money conditioned upon the safe arrival of a certain vessel named in the contract is under suspicion as covering an ordinary loan at interest.⁷ A *bona fide* sea loan usually contained additional clauses which indicated in what the funds were to be invested, or who was to go on the trading venture, or to what country the funds were to be carried for investment. It is likely, however, that very many, even of the loans containing such phrases, were not necessarily subject to the risk of the sea at all, but contained a risk clause simply that a loan which otherwise would have been illegal on account of its usurious nature might obtain the protection of the law.

In several instances the evidence is overwhelming that certain contracts which purported to be sea loans were not actually such, but were ordinary loans at interest. In a loan made probably about the year 1215, two brothers, who were of the nobility and hence less likely to be borrowing money for mercantile investment, borrow fifty pounds, which they agree to pay back with *proficuo ad rationem librarum XXX per centum*, fifteen days after the ships arrive from Syria.⁸ The repayment of the fifty pounds plus the thirty per cent interest is conditioned upon the safe arrival of a ship called Peregrina. But if that ship should not come to Genoa, the money is to be repaid if the ship called Benedicta comes safely to Genoa; and if that ship

7. For example, two sea-loan contracts, drawn up on the same folio, Not. Lanfr., reg. I, f. 114. Also, Chartarum II, no. 749.

8. Not. Lanfr., reg. I, f. 64.

does not come safely, the money is to be paid back if the ship which is called Gloria arrives safely! It is plain that the risk involved in the loan of these funds is merely nominal, since it is entirely unlikely that all three of the ships mentioned would be lost. Furthermore, this contract contains a clause which reads, *Sano tamen semper existente in terra dicto capitale*. Thus, to make assurance doubly sure, the lender of the funds provides that they could be employed only on land. This provision, indeed, seems almost superfluous, for at the time of year the contract was drawn (October 18) it was probably too late to have used the funds in any long voyage, since the convoys to Syria and other distant points usually left earlier in the season. Few loans are so palpably a disguise for usury as is this one, and it is difficult to understand how such a loan would ever have been drawn up by a notary who was acquainted with the law. It would have been illegal not only at Canon Law, but probably even under Roman Law; for under the laws of Justinian, which allowed a higher rate of interest upon a sea loan than upon a loan without maritime risk, it had been ruled that the funds loaned must actually undergo the maritime risk if the higher interest rate were to be charged.⁹

In another case, the archdeacon, the presbyter, and some others of the clergy of the church of San Lorenzo borrow sixteen pounds and agree to repay twenty pounds, contingent upon the safe going and coming of a specified galley.¹ They pledge the possessions of the church in Calegnano, and specify that they are going to use the borrowed money in buying church vestments.

9. Before the time of Justinian the rate of interest on an ordinary loan was limited to 12 per cent, with no limit on the rate for a sea loan. Justinian, A.D. 528, lowered the legal rate on ordinary loans, and limited that on sea loans to 12 per cent. Ashburner, *op. cit.*, p. cccvi.

1. Chartarum II, no. 735.

Here again it seems evident that the funds loaned are not really capital for a trading venture, but for a consumptive purpose.

The number of sea loans which can be placed definitely in the third class is rather small, principally because it was usually feasible so to disguise the contract that it is impossible to distinguish it from a sea loan of the first or second type.

It is evident in all three types of sea loan that the insurance clause is legally enforceable, and that it never became merely a meaningless phrase, even when it was used to cloak a usurious loan. The care with which the risk of loss by maritime disaster is differentiated from ordinary business risks,² and the attention given by the notaries to the proper incidence of the marine risk upon the different parties to the agreement, amply support this conclusion.³ The phrase which was most commonly used to express the contingency of repayment was *sana eunte nave vel maiore parte rerum ipsius nave*. Sometimes the phrase was *sana eunte et redeunte*,⁴ and in other cases it was *sana eunte et sana veniente*,⁵ so that in both of these instances the loan would be repayable only if the ship made the outward and the returning voyage safely. At times the name of the ship is mentioned,⁶ and at other times the ship figuring in the contract is any ship on which the borrower of the funds takes passage.⁷ In many cases no particular ship is

2. Thus in Not. Gugl. Cass., f. 177 v, Obertus Pilosus agrees to repay 6 pounds in money of Marseilles to Wilielmus de Albungono, and agrees that these pounds go "at the fortune of God and Obertus Pilosus, except for the perils of the sea and of the Pisans."

3. For example, in the second type of sea loan, it was provided that the pledged goods went at the risk of the lender, up to the value of the loan, while any surplus value went at the risk of the borrower. See description of this type above.

4. For example, Not. Lanfr., reg. I, f. 190.

5. For example, Chartarum II, no. 516.

6. For example, Not. Lanfr., reg. II, f. 37.

7. For example, Not. Lanfr., reg. II, f. 12 v.

mentioned.⁸ Sometimes when one is specified it is designated, not by name, but as the ship of a certain man or of a certain man and his partners.⁹

Many contracts provide an alternative contingency so that if the original vessel in which the borrower embarked was sold, or changed its journey, so that the vessel would not arrive at the port specified in the contract, the loan would still be payable. Thus, if the contract provided that the loan should be repaid contingent upon the arrival of a certain ship at Palermo, a clause was often inserted in the contract so that, if that particular ship were sold, or changed its route, the loan was to be paid conditioned upon the safe arrival of any ship to which the principal part of the men and goods which had taken passage on the original ship had been transferred.¹ In a contract such as this there is still a reasonable connection between the contingency clause and the protection of the borrower in case of marine disaster. In other contracts, however, it is provided that, in case of the sale or the change of itinerary of the original ship, repayment of the loan was to be made if a certain named ship arrived safely.² It should be noted in this case that there may be no connection at all between the safe arrival of the alternative ship and that of the man and his goods who borrowed the money. The necessity for the alternative contingency in order to protect the interests of the lender is evident enough, although the phraseology indicates that, while the insurance clause was binding at law, its use was not always primarily in order to protect the borrower against maritime misfortune. It is often difficult to tell whether a particular phrasing of a contract means

8. For example, *Chartarum* II, no. 836.

9. For example, *Not. Lanfr.*, reg. I, ff. 1, 93 v, 230.

1. For example, *Chartarum* II, no. 460.

2. For example, *ibid.*, no. 461.

that the lender of the capital is attempting to escape from the maritime risk that he was supposed to assume, or whether he is merely safeguarding himself, lest through accident or fraud his investment might be lost.³

An interesting feature of the insurance clause in the contracts lies in the fact that the contingency expressed was rarely that of the safe going of the ship alone, but, instead, the safe going of the ship and the major portion of its cargo. In this way, any funds invested in a ship or its cargo would have to be repaid even though the ship itself was cast away, if more than half of the goods on board were salvaged. However, if both the ship and over half of the cargo were lost, then none of the borrowed funds need be repaid, altho part of them might have been saved. This apparently was an arbitrary rule of law set up for convenience in determining whether or not the loan was to be repaid. By means of this provision the courts of law were enabled to escape the difficult task of determining just what portion of the loan should be repaid in case of marine disaster. The loan was thus always repaid in full, plus interest, or not at all.

Altho, as has been said, the phrase *sana eunte nave* expressed the contingency upon which the funds loaned were to be repaid, occasionally this phrase is omitted, either by accident or design, and the loan is to be repaid merely when a certain ship arrives at a specified port.⁴ This omission probably did not change the legal effect of the contract, but the customary phrasing of the risk clause was followed in most cases in order that the contract might not be suspected of being a simple loan at usury.

3. It is probable that a rule of law developed in Genoa, which covered such contingencies as the sale of the vessel named in the contract; for in the contracts drawn subsequent to 1165 it is no longer common to find express stipulations to cover such possibilities.

4. For example, *Chartarum* II, no. 749.

In the second type of loan, described above, there was a careful allocation of risk, so that the pledge representing the funds loaned was carried at the risk of the creditor up to the amount of the loan, and any residuum of value was carried at the risk of the debtor. In addition to the phrase *sana eunte pignore*, it was often the custom to specify the exact risk and its incidence by the phrases *ad tua fortuna*, or *ad sua fortuna*, or by some such phrase as "at the fortune of the aforesaid John," or like wording.⁵

The relationship of the medieval sea loan and the modern loan on bottomry is very close.⁶ They are very similar in their most characteristic feature, which was the insurance clause in the contract, which provided in each case that the loan need not be paid in case of marine disaster. However, the bottomry loan continued in use for a long time after the other forms of sea loans had been abandoned, and during this period it developed certain phraseology and provisions peculiar

5. Not. Gugl. Cass., ff. 1 v, 93 v, 218; Not. Lanfr., reg. I, f. 142 v.

6. The connection between the ancient Greek sea loan, the medieval sea loan, and the modern bottomry bond seems undoubted. (See Walford, *op. cit.*, i, 335, for comparison of ancient Greek sea loan with modern bottomry bond.) Goldschmidt explains the relationship as a dwindling of the general sea loan of medieval times into one single form of the sea loan which has come to be known as the bottomry bond or bill. *Op. cit.*, p. 354.

The English term "bottomry" seems to have been derived from Dutch sources. In a sea loan of the year 1570, the contract in the Dutch original is called a *bomerij brief*. (Select Pleas in the Court of Admiralty, ii, 75, Publications of the Selden Society.) This contract is very similar to some of the Genoese sea-loan contracts of the twelfth century in its functional provisions. It would not now, however, be considered as coming under the modern laws applying to bottomry. On the other hand, other earlier contracts which are very much like a modern bottomry bond were not so called (*ibid.*, p. 55). There seems no reason to believe that any feature of the English bottomry bond, except its name, was borrowed from Dutch or German sources. What seems more probable is that both the English and Dutch bottomry bonds are derived from a common Italian source, where the sea loan had been so long in use.

to itself. It should be noted that the loan on bottomry developed out of the original or *bona fide* sea loan, rather than from the second or third type of loan described above.

In a modern bottomry bond, the money borrowed by the master of a ship or his agent during the course of a voyage is always secured by a pledge of the ship, and must be used for the emergency outfitting, victualing, or repairing of the ship.⁷ There were no such limitations as to the security or the use of the proceeds of a Genoese sea loan of the twelfth and thirteenth centuries. The Genoese sea-loan contracts furnish examples of the pledge of real property, of ships, of various numbers of shares in ships, and of a general hypothecation of all the borrower's goods. In many other cases, in addition to other pledges, personal friends or acquaintances of the borrower acted as his sureties.⁸ The funds obtained from a twelfth-century sea loan were used for all sorts of purposes, rather than for the emergency service of a ship in a foreign port. They were generally employed in the purchase of goods of all kinds for use in trade. In other words, it was not necessary that the borrowed funds be used in connection with the property pledged as security for the loan.

The modern *respondentia* bond differs from the bottomry bond only in the fact that the cargo of the ship is security for the loan, instead of the ship itself. Like the modern bottomry bond it is an emergency loan, since a loan can be made upon the cargo only in case it is necessary in order to enable the ship to proceed with

7. According to the law of bottomry the lender has a lien on the ship, which has priority over all other claims except subsequent bottomry bonds. Hence the provision that a bottomry loan can be contracted only when it is absolutely necessary in order that the vessel may complete its voyage. See Hughes on Admiralty, St. Paul, 1901, p. 87.

8. See Chartarum II, 685, 709, 833.

the cargo to its destination, and only if the ship master is unable to communicate with and obtain funds from the owner of the cargo.⁹ Altho the *respondentia* bond is also probably a lineal descendant of the medieval sea loan, it differs from the sea loan in the same way as does the bottomry bond, and has the same similarities in that repayment of the loan is contingent upon the safe completion of the voyage.

The sea loan met a real need of commerce in the period when it was first developing. It was almost essential that the needy mariner should be able to borrow funds to outfit a ship, and that the merchant should be able to obtain capital for investment in a stock of goods, with the assurance to each that if he did lose ship or cargo by maritime disaster, his loss would be limited to his interest in the ship or cargo, and that his small possessions on shore or his very person would not be seized for a debt that he very likely could not repay. If it had not been for this provision, it is doubtful if many merchants or ship-owners would have had the temerity to borrow capital at all, on account of the heavy burden of the maritime risks.

With the lender the case stood otherwise. In the first place, it may be assumed that the lender could usually afford to stand an occasional loss, since the source of his funds was some sort of economic surplus. The lenders were willing to accord the principle of insurance against marine disaster to the borrowers, since they were thus enabled to loan their funds where they might not otherwise have been able to do so, and as a recompense they received a premium upon the money loaned large enough to include both an interest rate and an insurance premium. Thus the contingency of loss was shifted from a

9. Hughes on Admiralty, p. 91; Walford, op. cit., p. 334.

class which was not economically able to carry it to a class which was able to do so, and in so doing commerce was greatly assisted and stimulated.

As commerce developed during the Middle Ages, the sea loan probably became of greater importance as a means of evading the anti-usury laws than as a means of providing insurance for mariners or merchants. But the essential feature of the sea loan, which was the insurance clause, still continued in effect, and doubtless served a useful purpose. This is shown by the fact that when the necessity for concealment of usury disappeared with the growth of Protestantism and the decline in power of the Catholic Church, those features of the sea loan which had been the result of the ecclesiastical prohibitions of usury dropped away, and that feature which represented a real need of maritime commerce remained and developed into the law of bottomry.¹ On account of the development of pure marine insurance, however, the bottomry bond never became so important as the general sea loan had been, because the real need of commerce for insurance against maritime risk had been finally met in a new and more efficient way.

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1. It is possible that the general sea loan, which, as has been said, included loans on other things as well as ships, declined in importance after the middle of the thirteenth century, on account of the papal decretal of Gregory IX, which rendered its use as a disguise for a usurious loan of questionable value. See Goldschmidt, *op. cit.*, p. 352.

REVIEWS

RECENT TEXTS ON THE METHODS OF ECONOMIC STATISTICS

THREE of the most recent general texts on statistical methods as used in economics are those of Professors Chaddock, Day, and Secrist.¹ In commenting upon these books, occasion is taken to make certain general statements about the history and present status of teaching in economic statistics. A review of such teaching seems justified at present, not only by the striking increase in attention which instruction in economic statistics has received in recent years, but also by the very definite progress which has been made in the textual presentation of the subject.

For many years there has been some teaching of economic statistics in the leading universities of this country, but there was no textbook on the subject which took any account of the modern developments in the general science of statistics until King's text appeared in 1912.² It is true that one volume of Mayo-Smith's treatise on statistics, which was published in 1899, was devoted to the subject of statistics and economics; but this work was concerned with the description and interpretation of economic data rather than with matters of analysis. After the appearance of King's book, certain specific aspects of the problem of statistical analysis in economics were covered by books appearing in the United States; for example, Professor Mitchell's *Business Cycles* in 1913, Pro-

1. *Principles and Methods of Statistics*, by Robert Emmet Chaddock, Boston, Houghton Mifflin Company, 1925. Pp. xvi, 471. \$3.75. — *Statistical Analysis*, by Edmund E. Day, New York, The Macmillan Company, 1925. Pp. xxvii, 459. \$4.00. — *An Introduction to Statistical Methods*, by Horace Secrist, revised edition, New York, The Macmillan Company, 1925. Pp. xxxiii, 584. \$2.50.

2. *The Elements of Statistical Method*, by Willford I. King. New York, The Macmillan Company, 1912.

fessor Persons's translation of Zizek's *Statistical Averages* in 1913, Professor Mitchell's *Index Numbers of Wholesale Prices* (Bulletin 173 of the United States Bureau of Labor Statistics) in 1915, Professor Persons's *Indices of General Business Conditions* in 1919, Professor Mitchell's revision of his *Index Numbers of Wholesale Prices* (Bulletin 284 of the United States Bureau of Labor Statistics) in 1921, and Professor Fisher's *The Making of Index Numbers* in 1922. In 1917 appeared the first edition of Professor Secrist's *An Introduction to Statistical Methods*, and it requires only a brief comparison of the original and the revised editions of this work to secure an impression of the great development that the science has experienced in less than a decade.

Until 1922, the two books of King and Secrist, supplemented by the excellent texts of Bowley and Yule, served largely as the basis of classroom instruction in economic statistics in this country. It is true that Yule's text was not primarily intended for economists, but was concerned largely with problems of biological origin, and Bowley's text, tho based upon economic data, used many units and terms which were in considerable measure not familiar to American students. Altho both English books went through frequent revisions which, in the main, took account of the rapid development of the science of statistics, the two leading American books remained unchanged; and a situation developed soon after the war, in which no comprehensive texts were available covering the large and rapidly expanding field of statistical analysis in economics.

Instruction in this field at that time involved a presentation based exclusively on lectures, or developed from the available texts with supplementary lectures on the more recent methods and principles. Moreover, teachers of economic statistics were confronted by the need of presenting their subject to rapidly enlarging groups of students — groups that were coming more and more to include individuals who did not possess the basic mathematical training which many of the foreign texts presupposed. The problem of organizing specific courses in economic statistics assumed large propor-

tions; and it is by no means surprising that new texts on statistics, addressed primarily to teachers and students of economics, have appeared in striking number within the last four years. The three books under review are among the most recent of this group.³

Recent experience in the teaching of economic statistics, as reflected by these newer books, has resulted in the development of certain fairly well-defined course plans. Altho the main outlines of all the plans are somewhat similar, there appear three important points of difference. In the first place, there is a considerable difference of practice in regard to the order of treatment of the topics *collection of data*, *tabular presentation*, and *charting*. Some of the authors take up these topics immediately after the general introduction to the subject, whereas others are disposed to postpone them until the end of the text. A second point of difference among the texts concerns the place in the course which is given to the topic *index numbers*. Some of the authors put it at the end of the book; others, directly after the topics *averages* and *dispersion*; and others, at the beginning of the treatment of time series. The third point of distinction is in the location of the topic *correlation*. In some texts it appears immediately following the treatment of frequency distributions, whereas in others it is considered after the analysis of time distributions has been presented.

It is probably too early in the development of the teaching of economic statistics to be sure of any preferences as to these several arrangements. There are, no doubt, excellent reasons for the divergences; and altho one teacher may be confident that the reasons that lead him to follow a particular course plan are clearly adequate, another who prefers a different plan can readily find satisfactory grounds for his difference.

3. Among other recent texts are *Statistical Method*, by Harry Jerome, New York, Harper & Brothers, 1924 (reviewed in this Journal, vol. xxxix, at page 316); *Statistical Methods*, by Frederick Cecil Mills, New York, Henry Holt, 1924 (reviewed in this Journal, vol. xxxix, at page 469); *An Introduction to the Methods of Economic Statistics*, by W. L. Crum and A. C. Patton, Chicago, A. W. Shaw Company, 1925; *Statistics as Applied in Business*, by B. F. Young, New York, Ronald, 1925.

Perhaps all that can be said at present is that the subject may never lend itself to the same natural, systematic sequence of topics which is found in certain mathematical subjects, and that, even if there is unmistakable advantage in having one preferred sequence, the experience accumulated to date is not sufficient to enable us to select that sequence. It is well to emphasize also the remarkable uniformity in sequence which has already been achieved so far as the main outline of topics is concerned.

The newer edition of Professor Secrist's book is a complete revision of the original edition, with many enlargements to take account of the extensive developments in the subject since 1917. The present book is in many respects a distinct improvement over the original volume, and indeed is essentially a new book. Of the three books under review, Secrist's text comes nearest to being a treatment of the problems of business statistics. It is, to be sure, chiefly concerned with economic statistics; but a considerably larger portion of the illustrations are drawn from the field of business statistics than is the case with other more prominent texts.

Moreover, Secrist's book gives much more attention to the problems encountered in the collection of statistical material than is the case with any other American text. Indeed, it may fairly be said that it is the principal elementary source of information on this important aspect of statistical analysis. The author's point of view is indicated by his statement (page 56) that "there is almost as much science in the way statistics are collected as there is in their subsequent use, but this truth is rarely appreciated by the inexperienced." Professor Secrist is one of those statistical practitioners in the United States who have frequently encountered the difficulties attending the collection of data, and perhaps no one is better qualified than he to speak upon this aspect of the subject. Certain it is that many of our texts err by inadequate attention to these problems, and many courses in statistics could be improved by giving larger attention to the collection of data and the nature of statistical material.

The author gives very careful attention to the important question of units, emphasizing the necessity of precise definition, bringing out the distinction between simple and composite units, and insisting upon the important difference between crude and corrected ratios. He devotes an entire chapter, about one tenth of the content of his book, to statistical classification and tabulation, and gives many excellent rules to be followed in the organization of data and their presentation in tabular form. His chapters on diagrammatic and graphic presentation abound in useful suggestions, mainly "don'ts," and will be found distinctly helpful to all those who have need of preparing charts on economic data. The point of view in the discussion of the problems of charting seems to be that of ensuring proper presentation of the results rather than that of furnishing a helpful device for the statistical analyst. It is evident from the remainder of the text that the author by no means overlooks the fact that charting is an immensely valuable aid in analysis, but there is room for the suggestion that the treatment of the subject of charting could well be developed more largely from the point of view of the student of data than is the case not only in this text but in several others.

While the book gives no large amount of attention to the subject of sampling as such, there are various points at which the author's attitude is more or less apparent; for example (page 32), "A satisfactory sample must contain the characteristics common to the entire 'population,' and these must be represented in the same proportions as they are found in the material sampled"; and (page 266), "The fact that errors in measurements relating to economic and social phenomena are not subject solely to chance makes it impossible in such cases to use with assurance the arithmetic mean as the 'true' average."

The utility of the concept of cumulated time series (page 290) does not seem clear from the text; but the author evidently wishes the student to avoid the analogy of a cumulated frequency series, which would suggest securing the median from this form of cumulation. He insists rather that the

median must be obtained from the data arrayed in magnitude, rather than ordered in time. Concerning the use of the median in a time series, the author says (page 292): "Indeed, in the business world, the occasion for doing the former [securing the median amount in an historical series] will probably occur more frequently than the latter [securing median amounts in frequency series]. When it is desired, for instance, to distribute expenses over a period, the proportions incurred during one quarter or one half of the time may be of real significance." It should be noted that the text properly emphasizes that the mode of a time series (page 297) is the most frequent size of the variable magnitude, rather than the peak of the time graph.

The reviewer is very skeptical about the wisdom of introducing the calculation of the correlation coefficient for a grouped series (page 418) by the use of a distribution in which the two variables are ratios, their numerators being common. It is probable that the student would be less inclined to make inappropriate use of correlation methods if his early acquaintance with the subject were in connection with relationships between simple variables, rather than with relationships between complex variables, and particularly complex variables having a common factor.

Professor Secrist's treatment of the analysis of time series is based largely upon a discriminating use of the methods of Professor Persons, and is altogether one of the most useful additions in the present edition. There is reason, however, to question the validity of the statements (page 452), "Since the medians and chain relatives are taken as typical of the entire period, the excess, 14.3 per cent, may be regarded as the average trend"; and (page 459), "The cycle percentages are distinctly less 'ordered in time' than are the original items." In the first case, the discrepancy encountered in the adjustment of the median link relatives is in practice often due in considerable measure to other causes than the presence of trend, and it is dangerous to assume that it is in any way an average trend. In the second place, there seems no adequate reason

to believe that the items representing cyclical fluctuations are less "ordered in time" than the original items, merely because certain of the temporal relations of the original items have been removed. Altho it may be contended that the temporal relations thus eliminated had served originally to make the ordering in time more effective, positive evidence that the cycles are any more thoroly subject to the law of chance than the uncorrected actual items has not been adduced. On this point, however, the author goes on to say (page 459): "Series relating to business and economic phenomena are much more alike in their cyclical relations alone than they are in all of their fluctuations. Their trends and seasonal variations are peculiar to themselves; their cyclical fluctuations are the results of underlying business conditions affecting industry and trade generally."

The concluding chapters are devoted to the subject of index numbers. The author discusses the principal methods of making index numbers, and describes and compares the various generally accepted formulas. The critical discussion of the subject follows largely the development presented by Professor Mitchell in his revised *Index Numbers of Wholesale Prices*. The author in this analytical chapter on index numbers attempts to touch only upon the high spots, and nevertheless succeeds in setting forth many points of great value to the economist. The final chapter contains a description of many index numbers in actual use, not only those of prices, but also those of production and trade.

Professor Chaddock's text is somewhat more general in its treatment of the problems of statistics than either of the others under review. It approaches the subject from the point of view of social science as a whole. Not only are the data used to illustrate the discussions drawn from more general fields than that of economics alone, but the author at times introduces into the text specific opinions upon social questions. For example (page 7), "The frank acceptance of community responsibility for the continuance of conditions beyond the control of the individual characterizes modern

social movements," and (page 8), "These classes [workers in seasonal industries] of the unemployable experience the most hopeless poverty, and for much of it they are not responsible as individuals"; and (page 32), "Whatever else the venture [government control of railways during the war] may have been, it was not a fair test of the effectiveness of government ownership."

Professor Chaddock makes wide use of the graphic method as an aid in the analysis of data, and much of his comment upon charting is particularly helpful. It is suggested, however, that the use of a shaded area chart (page 48) for a time series is likely to convey a false impression concerning aggregates unless proper reservations are attached. The analysis of the frequency series, and in particular the discussion of the averages, are very perspicuous. In this connection many important points — for example, the combination of averages, the essential rôle of weights, and the limitations of the individual types of averages — are very clearly brought out. Attention should be called to the statement (page 125) that the geometric average reduces the influence of extreme variants. Obviously the author has in mind extremely large variants, but there is danger that the student may be misled when the proposition is phrased in these terms. The important truth is that, while the geometric average is less affected by large variants, it is more affected by low variants than is the mean. In the discussion of the median, the author calls attention to the lack of representativeness, as respects the distribution in its entirety, in cases when the series is multimodal; and he shows by the discussion and chart on page 104 that the same objection applies also to a computed average such as the arithmetic mean. The author is careful (page 144) to emphasize that the mode of a time series is not given by the peak of the time chart but by the most common value of the variable.

The text emphasizes the difference in the problem of sampling between an adequate sample and a representative sample (page 245). This point deserves more attention than it is ordinarily given, for it really amounts to emphasizing the

effect, of the presence of accidental errors and systematic errors, upon the results of the sampling process.

The presentation of the topic of correlation is developed from the point of view of the average relationship between the variables as evidenced by the curves of array-means. Here, as is customary in discussions on this aspect of statistical method, the symbolic tools of algebra are liberally used and the familiar regression equations find a prominent place. Writers in general have found it well-nigh impossible to develop the correlation methods without resort to those mathematical devices which, however clear and helpful to the initiated, are quite forbidding to many students. Appropriate attention is given to the calculation of the correlation coefficient and of the estimated values of the variables as afforded by the lines of regression. The author's discussion of the method of rank correlation is particularly valuable in that it sets forth the nature of the fundamental assumption in Spearman's original method, and of the revised assumption lying at the basis of Pearson's improved method.

The analysis of variations in time series proceeds largely along the lines laid down in Professor Persons's *Indices of General Business Conditions*, but introduces a considerable number of additional points which have recently found a place in the treatment of data of this type. There is some ground for doubting the general usefulness of the method of semi-averages (page 320), and it would probably be helpful if the author indicated the sort of cases for which this method may be regarded as appropriate. The reviewer is inclined to think that the passage from annual to monthly data, which occurs in the midst of the development of the general method of analysis, may tend to confuse the reader. The problem of secular trend no doubt is considerably simplified by using annual figures; altho there is some question whether certain decisions, such as those concerning length of interval and form of mathematical law, can most effectively be reached by an examination of annual figures alone. The author prefaces his transition from annual data to monthly data by an examination of the lag between the cyclical fluctuations of two

annual series, each corrected for trend. No doubt it is quite possible to discover lag relationships between two series of actual data, under favorable conditions; and, moreover, it is altogether reasonable to examine lag between the seasonal movements of two series. In general, however, the idea of lag enters into the problem of time variation in the comparison of cyclical movements, and the reviewer is of the opinion that the presentation would have been more direct if the discussion of lag had been postponed until after the isolation of the cyclical fluctuation.

The latter portion of the text is given over to a general discussion of the collection of statistical data and their presentation in tabular and graphic form. The author very properly emphasizes the need of a well-defined purpose for a statistical investigation at the time of undertaking the collection of the data. This of course raises the point whether an investigator should have a preliminary hypothesis at the time of approaching a particular statistical problem. In this connection the author says (page 372): "A working hypothesis, in the scientific sense, is a theory or explanation held after careful canvass of the known facts, in full knowledge of other explanations that have been offered, and with a mind open to change of view if the facts disclosed by the inquiry warrant a different explanation. . . . An hypothesis of this character is usually desirable and even essential." This view is quite in accord with the dictum of Keynes that we use statistical arguments solely to strengthen propositions for which there already exists a degree of probability; and modern scientific practice also confirms this judgment. Because of the more than occasional partial use of statistics to support a preconceived opinion, there has developed among scientific statisticians a hesitancy amounting to over-caution as respects the forming of preliminary hypotheses; and the author's emphasis on the utility of hypotheses is quite fitting. On the other hand, the author, in his excellent and very valuable Chapter 2, sets forth the serious dangers attendant upon some of the more common "misuses of statistical data."

Professor Day's textbook is manifestly the work of a very effective teacher. Moreover, it shows indications that the writer has had wide experience with practical problems of statistical analysis in economics. A very considerable portion of the earlier chapters in the book is devoted to a careful classification of statistical series according to a scheme somewhat different from that generally recognized by other authors. In this classification, Professor Day gives especial attention to the so-called spatial series, and he groups together those descriptive series which are concerned, on the one hand, with enumerations of individual cases according to the presence of specific attributes, and, on the other hand, with the frequencies of cases having a given variable attribute in specified sizes. Because of the vast importance of the frequency series in the development and the ordinary exposition of the methods of statistics, there is room for doubt as to the wisdom of giving it a subordinate place in a general classification of statistical data. The processes of analysis available for the attributive series are quite different from those available for the examination of frequency series. In fact, Professor Day uses the term frequency in a somewhat more general sense (page 11) than is commonly accepted among statistical technicians.

The text makes considerable use of graphic methods in the development of the principles and the processes of analysis. Indeed, this tendency to rely upon the graphic aid in analysis is very marked in all the more recent texts on statistics, and probably reflects a similar development in the conduct of research in economic statistics. As a rule, the charts throughout this book are carefully made and conform to the generally accepted requirements of good graphic presentation. It should be noted that in one of the illustrations (page 61), a left-to-right change in the variable magnitude is negative rather than positive. The fact that the variable here is designated by letters rather than numerals does not seem adequate reason for inverting the order customarily followed, at least without calling attention to the reasons for so doing.

The reproduction of the Brinton rules for graphic presenta-

tion is a feature of this book, as in the case also of Professor Chaddock's text and at least one other of the recent books on economic statistics. The reviewer presumes to suggest that it is probably too early to attempt to standardize graphic presentation of economic data. Whatever the constitution of the Brinton committee, it seems fairly clear from the "rules" laid down that data other than economic must have been mainly under consideration when they were formulated. While there is much of value in them, numerous points of form are fairly open to criticism. In particular, the economic statistician will wonder what good reason exists for always insisting that the scale of a logarithmic chart begin with a multiple of ten: this requirement sacrifices one of the very advantages of such a chart. It is not unlikely that the vast changes in statistical technique, which have marked the last decade, have extended also to graphic methods; and Professor Day very properly indicates the preliminary nature of the rules.

An entire chapter is devoted to the subject of spatial distributions, with particular attention to the graphic problems involved; and very useful suggestions are made concerning the adaptation of the mapping process to the presentation of statistical data. The reader will be disposed to wonder, however, whether certain geographical series do not have an important independent variable other than mere space; for example, climate, soil, altitude. To be sure, it will be said that in so far as such a definite independent variable might be predicated, it would be possible to regard the problem of analysis as one involving two dependent variables, both relating to the single independent variable, space or areal distribution. Nevertheless, there is a point here which should be carefully considered in the separate presentation of this type of series, and it is believed that this consideration may very seriously affect the uniqueness of the concept of spatial as distinct from other attributive distributions. The author's views on this aspect of the question are perhaps suggested by the text (page 228): "Comparison of spatial series by means of statistical maps generally has the purpose of discovering significant

relationships. These relationships may be direct, or may result from some underlying factor not specifically indicated in the variables represented. Sometimes the form of the series suggests what this underlying factor is. For example, there are basic physiographic factors which determine the spatial variation of many other phenomena. Among agricultural elements, temperature and rainfall are such factors. In the maps of Chart 52 the geographic variation of the average length of the growing season and the average annual precipitation is shown for the United States. Familiarity with the spatial characteristics of these factors enables one to detect at once some of the influences determining the geographic features of various economic and social phenomena."

In the chapters on analysis of frequency distribution, effective use is made of frequency curves, and the author in several instances uses the valuable device of exhibiting the tabular data at the side of the chart. The discussion of the simple averages follows the plan which has now become more or less generally accepted, dividing the types into those of position and those based upon size. It should be remarked that, in the footnote on page 142, the relation stated between the geometric average and the arithmetic and harmonic averages is not an algebraic identity, except for the trivial instance in which there are only two items to be averaged.

In the treatment of correlation, Chapter 12, which presents the concept of correlation, is particularly perspicuous; but it seems that in Chapter 13, altho the development is carried through with great care, difficulties rapidly multiply, and the student is likely to find this one of the most burdensome portions of the book. The author introduces a term, "reduced values" (page 194), which has not received general acceptance; and uses in a general sense the term, "the index of correlation" (page 201), which seems destined to receive a specific technical significance. The statement (page 209) that a zero coefficient of correlation is convincing proof of complete independence should probably be modified by the proviso that this is true only in the case of an assumed linear regression. As a matter of fact, it is possible to have the

coefficient of correlation zero, and yet have a very high degree of actual correlation on a nonlinear basis. The introduction (page 210) of the term "spurious correlation," without careful specification of its technical meaning, may mislead the student, for a use of the term in its ordinary sense is quite out of keeping with its significance in statistical research. In other words, spurious correlation in statistics does not necessarily mean wrong or incorrect correlation, but rather it means insignificant or meaningless correlation.

Speaking broadly, the author's analysis of time series is the most satisfactory part of the book. It is in this field that he has made some of his principal contributions to statistical science, and his discussion of the theoretical and technical points involved is particularly clear and systematic. The rules given for the elimination of seasonal variation from the ratios of the original items to the ordinates of trend (page 301) are not fully equivalent to those followed in the standard procedure devised by Professor Persons, and the author does not give clearly the reasons for the distinction. In particular, his suggestion that the ratios should be divided by the seasonal indexes is not satisfactorily defended. Whether correction should be by division or by subtraction is, however, controversial, and it would have been gratifying to find a fuller statement of the theoretical and practical aspects of this detail of method.

Chapter 19, on residual movements, including cyclical and irregular fluctuations, furnishes light on important phases of the problem of interpreting results in a cyclical analysis which cannot be derived from the usual elementary texts. The reviewer hesitates to approve the rather arbitrary elimination of an irregular movement as indicated in the chart on page 305, and finds no satisfactory justification for the use of a moving average in the case of most series, as on page 307. The elimination by free-hand methods of an irregular jag on a cyclical diagram can be accomplished only by taking for granted the form of the true cyclical movement during the abnormal period. The evidence of the statistical record for periods which are admittedly not abnormal is that the cyclical

manifestation in a particular series is likely to deviate considerably from a smooth curve; hence, any interpolation in abnormal periods on the basis of a smooth curve cannot be regarded as other than a highly idealized estimate of the probable cyclical changes. Such a revision of the statistical record seems dangerous, chiefly because the precise numerical character of the result conceals the arbitrariness — the absence of empirical basis — in the revision process. The use of a moving average to eliminate minor irregularities from a series ordered in time can presumably be defended only on the basis that an estimate for a particular month, say March, is afforded not only by the item for March, but also by the items for February and April and by the items for January and May. In so far as it is sound to assume that the level in January and February and April and May is indicative of the level in March rather than of the level in the individual month proper, this hypothesis has some justification. So considerable are the actual cyclical changes from month to month in most series, that this assumption in most cases seems scarcely defensible. Moreover, it is at those times when the cyclical movement is most pronounced that the relative importance of the real change from month to month becomes predominant, and the moving average sacrifices much of the information afforded by the record.

The three chapters on index numbers are of especial interest to economists, and in these Professor Day presents a particularly discerning discussion of the technical problems involved in the measurement of price changes. The doctrine of type bias as formulated by Professor Fisher is explained, and apparently the author largely agrees with Professor Fisher, even to the extent of stating (page 346), "The bias of the harmonic mean is thus downward and of the same magnitude as the upward bias of the arithmetic." The author is particularly emphatic as regards the advantages of the simple geometric mean over the simple arithmetic mean in the construction of index numbers. He gives his preference, in the chapter on weighted index numbers, to a formula expressing the ratio between weighted aggregates, and it is probable

that this opinion is very rapidly gaining ground among practical statisticians. Professor Day states concerning the simple aggregative index with constant weights (page 364) that "the index is both accurate and unambiguous, and may be readily developed continuously for considerable periods."

The concluding chapter is on "The Nature of Statistical Results," and summarizes some of the author's views on the limitations of statistical method. In this chapter he gives the student the benefit of his own mature judgment on the adaptability of statistical devices in the solution of economic problems, and sets forth many valuable suggestions concerning the interpretation of statistical results. It is in this chapter that he states the relation of the doctrine of statistical sampling to economic analyses, and indicates the relatively smaller use which one can make of the notion of probable error in economic statistics.

No doubt certain details of presentation in the three books under review have been dwelt on, and it should in fairness be remarked that about many of these points there exist real differences of opinion among specialists in economic statistics. The science of economic statistics is yet in its beginning, and we have at present no generally recognized body of doctrine that might properly be called the *theory of economic statistics*. That important fragments of such a theory exist cannot be questioned; but that any comprehensive formulation of the theory is anywhere present, even in the minds of many of the leading investigators in the field, is quite doubtful. Indeed, it is only recently that we have become convinced that there is a place for such a theory, apart from the general theory of statistics which derives from the notion of probability. The components from which the theory of economic statistics will gradually evolve are now being built up, but there are yet wide gaps, and much controversy remains concerning some of the problems already approached. The teacher of an elementary course in the subject cannot overlook these many points of doubt, and he should be warned against accepting as final some of the views now quite widely

held and frequently finding their way into introductory texts.

The reviewer wishes to suggest also that his giving so great attention to matters of detail indicates that he finds very little ground for difference with the authors as respects the major points of doctrine and presentation. All three books are above reproach on the larger points to which one ordinarily gives first attention. Much difficulty would be encountered in choosing among them for use in connection with a course for beginning students, or for placing upon the shelves as a single reference work for the practising economic statistician. For both purposes the specific point of view to be emphasized in the use of the book would probably ultimately govern. The text of Professor Secrist is a great storehouse of information concerning the wise handling of details of statistical analysis; Professor Chaddock's book approaches the subject from the broad viewpoint of the sociologist, and offers the reader a clear idea of the place of statistical analysis in social science; and Professor Day's treatment is a careful attempt to give the economist a systematic exposition of the statistical method as a tool of research. All are valuable additions to the literature of economic statistics; and each is an important contribution to the progress of instruction in a subject which is inherently difficult to present to beginners, and which is in such a stage of development that an author can have no confidence that the result of his labors will not be rendered partially obsolete within a decade by discoveries which none can foresee.

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NOTES AND DISCUSSIONS

THE EARLIEST USE IN ENGLISH OF THE TERM CAPITAL

MAY I make a brief addition to the scholarly note by R. D. Richards, which appeared in the February issue of the *Quarterly Journal of Economics*? In this Mr. Richards states that the earliest use of the word "capital" which he has found in English occurs in Peele's *Pathe waye to perfectnes*, printed in 1569. Mr. Richards has quite pardonably overlooked an earlier work which was printed in 1547. This is an English translation of the *Nouvelle Instruction* by Jan Ympyn Christoffels, printed in 1543. The translation bears the title, "A notable and very excellente woorke, expressyng and declaring the maner and forme how to kepe a booke of accôptes or reconynges, verie expedient and necessary to all Marchantes, Receiuers, Auditors, Notaries, and all other. Translated with greate diligence out of the Italian tounge into Dutche, and out of Dutche, into French, and now out of French into Englishe 1547." The only copy of this work known is one that was found by Dr. Hugo Balg and described by him in the *Zeitschrift für Buchhaltung*, II, pages 145-149. This work was at that time (1893) in the Nicolai Gymnasium at Reval. I am informed by that assiduous student of the history of bookkeeping, Mr. P. Kats, that since the Great War the book is no longer to be found in this library. Our knowledge of it is therefore limited to the description given by Dr. Balg.

According to this description, Chapter IX treats of the significance of the words creditor and debtor, *a* and *per*, cash and capital. Curiously, while Dr. Balg gives the exact English wording of most of the chapter headings and in some

cases considerable sections of the text, he does not do so in regard to Chapter IX, merely giving a German rendering of the subject-matter therein treated. There can be no doubt, however, that the word "capital" was used in this place. Ympyn's work is in part a translation of Paciolo. The words "cassa" and "caudale" which occur in Chapter XII of Paciolo are translated in Chapter IX of Ympyn's French version as "casse" and "capital," and Balg's description of the English version gives the forms "cassa" and "capital." It seems certain that in rendering the French term "capital" into English, the same form was used, and that Balg in describing this passage quotes the actual words used in the English text.

Ympyn's definition of "capital" as found in the French version is as follows:

"Et par ce mot Capital entendrons les biens aduenus par traictes de mariaiges, le trespas daulcun, ou aultrement & ce que vng marchand pourroit auoir en garde, comme aussi marchandise, soit a compaigner, ou par soy seul."

The question is raised by Mr. Richards, whether "capital" was employed in the lost work by Oldcastle. It is true that it occurs in Mellis's *Briefe Instruction*, which claims to be a renewal and revival of Oldcastle's work published forty-five years earlier; but we cannot be sure that Mellis has in all places literally transcribed the earlier work. But so far as the use of the term "capital" is concerned, the presumption that he did so is very strong. Both Ympyn and Oldcastle made almost simultaneous translations of Paciolo. The former translated "caudale" as "capital." The professed reproduction of Oldcastle gives the same rendering. There seems no room for doubt then that the original version of Oldcastle as published in 1543 also used "capital."

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THE AGED POOR OF MASSACHUSETTS

THE recent report of the Massachusetts Commission on Pensions¹ makes available the results of an extensive inquiry into the economic status of the aged people of the state. The inquiry had a double purpose: first, to throw light upon the degree of the need for old-age pensions or for some other system of relief; second, to supply a basis for reliable estimates of the amount of public expenditure that old-age pensions or alternative schemes would require. This investigation appears to have been the first of its kind. Other commissions reporting upon the same general problem have contented themselves with information relating to samples from the economic classes that might be supposed to be most in need of public assistance, and have therefore been unable to get any measure either of need or of probable expense.

The commission's classification of the aged population of the state is reproduced in Table 1. The total aged popula-

TABLE 1. — AGED POPULATION OF MASSACHUSETTS, 1923-1924

Class	65 years of age and over		70 years of age and over	
	No.	Percentage distribution	No.	Percentage distribution
<i>Estimated Population — Total</i>	<i>225,000</i>	<i>100.0</i>	<i>133,000</i>	<i>100.0</i>
<i>Public pensioners:*</i>				
United States military pensioners	15,000	6.7	13,500	10.2
Federal, State, county, city and town civil pensioners	3,000	1.3	2,100	1.6
<i>Persons aided by organized charity:</i>				
Alms-house inmates	4,123	1.8	2,740	2.1
Aided by public charity in outdoor relief	3,791	1.7	2,655	2.0
Aided by private organized charity in outdoor relief (cases reported)	1,471	.7	1,119	.8
Residents of private homes for the aged	2,921	1.3	2,492	1.9
Other recipients of relief	1,800	.8	1,250	.9
<i>Persons under custodial care:</i>				
In prisons, jails, etc.	250	.1	90	.1
In State institutions for insane	2,750	1.2	1,660	1.2
<i>Persons not supported by public funds or by private organized charity (non-dependent aged)</i>	<i>189,894</i>	<i>84.4</i>	<i>105,394</i>	<i>79.2</i>

* Including only those with pensions of \$360 or over.

1. Report on Old-Age Pensions (Senate No. 5). Boston, November, 1925.

tion was estimated on the basis of the federal census figures for 1910 and 1920; the numbers in the various dependent classes were obtained by means of special inquiries, and the numbers put down as non-dependent was got by subtraction. Non-dependents are a larger proportion of the persons who are over 65 than of those who are over 70. The difference is largely accounted for by the relatively larger number of federal military pensioners among the persons of more advanced age. Among persons over 65 years of age, 6.3 per cent were partially or wholly dependent on public or private organized charity. The corresponding percentage of persons over 70 was 7.7.

For most of these different classes a considerable amount of detailed information had to be secured. The largest class, and the one in which there were the largest differences in respect of economic status, was the group of non-dependents. A complete census of that class was impracticable. Recourse was accordingly had to sampling. The 10 cities and 23 towns in which special inquiries were made² were selected so as to secure, first, adequate geographical distribution, and second, something like a roughly weighted representation of different types of communities. Of 21,594 persons who were interviewed, 2,491 were less than 65 years old, but were the wives or husbands of persons who had attained that age. Of the rest, 1,683 were public pensioners or were aided by public or

2. The cities were Boston, Worcester, Springfield, Lowell, Fall River, Pittsfield, Salem, Gloucester, Woburn, and Brockton. The towns were: Lynnfield in Essex County; Arlington and Littleton in Middlesex County; Blackstone, Winchendon, and Warren in Worcester County; New Salem, Sunderland, Montague, Buckland, and Ashfield in Franklin County; Cummington, Granby, and Easthampton in Hampshire County; Southwick and Palmer in Hampden County; Florida in Berkshire County; Norwood, Dedham, and Millis in Norfolk County; Mansfield in Bristol County; Harwich in Barnstable County; Edgartown in Dukes County. Some of these are suburban towns, some are in farming districts, some have manufacturing industries. In the towns and in some of the cities nearly all of the aged residents were interviewed. In Boston at least one precinct in each of the 26 wards was canvassed. In Springfield two wards were covered, while in Lowell, Fall River, and Worcester every fifth, and in Brockton every third, person 65 years old or over on the assessors' lists was interviewed.

private organized charity, leaving 17,420 non-dependents. The work of the commission's field agents was carefully supervised, and the facts obtained with respect to incomes and property are believed to be reasonably trustworthy.²

The figures brought together in Table 2 are simply aggregates of the results obtained in the different cities and towns. The figures for the separate localities (given in detail in the commission's report) have a fairly wide range of variation. In the town of Millis 70 per cent of the persons interviewed owned property worth \$5,000 or more. The corresponding figure for the city of Gloucester was 26.5 per cent. In the city of Fall River 29 per cent were found to have no income

TABLE 2.—FINANCIAL CONDITION OF RESIDENTS OF MASSACHUSETTS, 65 YEARS OF AGE AND OVER, NOT IN RECEIPT OF PUBLIC PENSIONS OF \$360 OR OVER, OR AIDED BY ORGANIZED CHARITY*

Class	Annual income (including, for married persons, income of spouse)	No.	Percentage distribution
<i>Total sample</i> † .....	.....	17,387	100.0
Possessing property of \$5,000 or more (including, for married persons, property of spouse)	Not reported	7,078	40.8
	\$1,000 and over	2,536	14.6
	\$700-\$999	1,072	6.2
	600- 699	399	2.3
	500- 599	391	2.2
	400- 499	263	1.5
Not possessing property of \$5,000 or more either singly or with spouse ‡	300- 399	340	2.0
	200- 299	503	2.9
	100- 199	749	4.3
	Under \$100	1,114	6.4
	No income	2,912	16.8

* Both members of a married couple are placed in same financial group, if both are over 65 years of age. No person under 65 years of age is included.

† Excluding 63 persons whose incomes were not ascertained.

‡ Assigning half of joint income to each married person, the percentage distribution of this group is as follows: \$500 and over, 18.6; \$300-\$499, 7.8; \$100-\$299, 8.0; under \$100, 8.0; no income, 16.8.

3. Income was taken as including only personal earnings and income from property. Gifts and support furnished by others were classified as aid, not as income. Some arbitrary rulings were necessary. Board and lodging supplied by an employer was put down at \$7 a week. Food and fuel produced and consumed on a farm was valued at \$225 a year for an individual and \$350 for a married couple. In accordance with a common provision of old-age pension legislation, the net income from real estate not actually yielding a money income was put at 5 per cent of its value. These arbitrary factors have small effect on the totals.

of their own, in the town of Harwich only 1.8 per cent. But these are the extremes. For most of the cities and towns the percentages do not depart very widely from those that are given in Table 2, altho, in general, the aged are rather better off in the towns than in the cities. Experiments showed, furthermore, that no reasonable scheme of weighting the constituent figures would have had any material effect upon the percentage distribution of the aggregates. It is clear that the sample is reliable, and that another sample of the same general sort would have given practically the same results.

One significant fact which this investigation reveals is that, by the time they have reached old age, most persons either have saved a substantial amount or have saved little or nothing. The line is drawn even more sharply than the figures in Table 2 suggest. Other figures secured by the commission — I cannot take space to reproduce them here — show that among the persons who had accumulated less than \$5,000, those in the lower income groups were more likely to be property holders. Incomes of less than \$300 a year are largely derived from savings. Incomes of from \$700 to \$1,000 are more largely personal earnings. It is clear that the savings of the aged are of two distinct types: (1) substantial accumulations; (2) small sums which some of them have managed to get together, and to which they cling as the last means of self-support or as the last reserve against contingencies.

The figures in Table 3 show how earning power fails and small savings are gradually used up as age advances. There is little change in the proportionate number of persons who have property of \$5,000 or more. But the relative number of persons who, with little or no property, are able to get an income of \$1,000 or more, or even of from \$500 to \$1000, diminishes so that a relatively larger number find themselves either with an exceedingly small income or with no income at all.

These figures give an exaggerated impression of the degree of need that exists among the aged people of the state. Only a very small number were found to be in what might fairly

TABLE 3. — FINANCIAL CONDITION OF RESIDENTS OF MASSACHUSETTS NOT IN RECEIPT OF PUBLIC PENSIONS OF \$360 OR OVER OR AIDED BY ORGANIZED CHARITY, BY AGE GROUPS

Class	Annual income (including, for married persons, income of spouse)	Percentage distribution		
		65-69 years	70-74 years	75 yrs. and over
<i>Total sample</i> .....	.....	100.0	100.0	100.0
Possessing property of \$5,000 or more (in- cluding, for married persons, property of spouse)	Not reported	41.1	41.0	40.0
	\$1,000 and over	21.6	12.5	5.5
	\$700-\$999	7.8	6.5	3.1
	600- 699	2.5	2.7	1.5
	500- 599	2.4	2.6	1.7
	400- 499	1.6	1.5	1.4
Not possessing property of \$5,000 or more, either singly or with spouse ..	300- 399	1.8	2.2	1.9
	200- 299	2.3	3.2	3.7
	100- 199	2.8	4.4	6.7
	Under \$100	4.2	7.0	9.3
	No income	11.9	16.4	25.2

be called actual want. Many of the "non-dependent aged" are non-dependents only in the technical sense that they are aided neither by public funds nor by private organized charity. Of the persons over 65 whose property holdings were less than \$5,000 and whose incomes were less than \$1,000, only 35 per cent were entirely self-supporting, while 55 per cent were wholly or partially supported by their children, 9 per cent by other relatives, and a few by friends. A particularly significant fact discovered by the commission is that, while every 100 persons among the non-dependent aged have on the average 260 children living, the number (of children living) for recipients of outdoor relief is 100; for residents of private homes for the aged, 57; for almshouse inmates, 62. On the average, the non-dependent aged have four times as many children living as almshouse inmates — which is one of the reasons why they are not almshouse inmates. Marital condition, also, has an important relation to economic status. Among the non-dependent aged only 7.1 per cent of the married persons had no income, as against 15.4 per cent of the men and 32.5 per cent of the women who were single or widowed.

The annual cost of non-contributory old-age pensions of a dollar a day, beginning at age 65 for all citizens of Massachusetts,⁴ would be about \$58,000,000. Putting the age of eligibility at 70 would reduce the cost to about \$32,000,000. By including only persons over 70 whose property is less than \$3,000 and whose income is less than \$365, and by providing that the pension together with whatever income is received from other sources should not exceed \$365, the probable cost is cut to about \$10,000,000 or \$11,000,000 annually. By refusing pensions to persons whose children are able to support them, this figure might be lowered to \$5,000,000 or \$6,000,000. The possible reduction in present forms of charitable expenditures for the aged poor might amount to as much as a fourth or a fifth of the total cost. These estimates do not allow for the possibility that a pension system, particularly one with a means qualification, might reduce the amount of income which aged persons would provide for themselves.

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DEPRECIATION OF THE FRANC IN A FRENCH COLONY

THE depreciation of the currency of a country often produces anomalous situations. I have in mind particularly some recent experiences in French West Africa. It may not be amiss to recount them and to discuss the questions arising, for they are more or less typical of the situation likely to arise in colonies of a country whose currency is gradually undergoing depreciation, and where, as is the case in French West Africa, the currency of the mother country is the only money used.

4. Excluding public pensioners, persons in correctional institutions and in hospitals for the insane, aliens, and citizens who have lived in Massachusetts for less than 15 years.

When I arrived at Dakar, Senegal, the principal port of French West Africa, in October, 1925, I had to convert into francs \$75 more than I needed for my anticipated expenses inside the colony, because the government of the colony demanded that I deposit approximately the equivalent of \$75 as a guaranty of the expense of my repatriation in case they should later find me on their hands without money or a job. They refused to accept a deposit in dollars. In cashing my letter of credit I was able to get only 20 francs for each dollar. Then I made an expedition into the interior. During that trip the franc dropped considerably. On returning to Dakar and reclaiming my deposit, it was possible to obtain 25 francs to the dollar on letters of credit. Yet prices and wages in Senegal, by and large, were still about the same as in October.

It would be rather interesting to have an answer to the following questions. First, did I lose anything through being repaid in francs worth less in dollars than the francs I deposited? If so, how much? Second, if I lost, did anyone else make a corresponding gain? For simplicity's sake, let us leave out of account the heavy commissions charged by the West African banks for changing dollars into francs and vice versa, and also the interest accruing while the money is on deposit.

There are two cases to be considered. In the first case, after receiving back my deposit, let us suppose that I immediately leave French West Africa for territory other than French. That means that I must convert the francs returned to me into other currency, or pay for a steamship ticket, in francs, the equivalent of the price of francs in the currency of other countries. In that case I clearly lost \$15, for the francs returned to me, which originally cost me \$75, will now bring me only \$60, or \$60 worth of the currency of some third country. Twenty per cent of my deposit disappeared from view. And it is hard to see where there has been a corresponding gain. The French West African government returned to me the same number of francs and the same amount of purchasing power inside French West Africa that I deposited when I arrived here. The occurrence of a loss with-

out a definite corresponding gain to someone else is due to the fact that suddenly — by act of God or the Devil, for aught that is evident in French West Africa — the goods and services of French West Africa dropped approximately 20 per cent in the proportion in which they exchange against the goods of other countries. One might perhaps say that my loss was the potential gain of the rest of the world, outside France and the French colonies, in that all other countries can now, if they choose, purchase French and French colonial goods cheaper than they could before the franc took this last drop. But one cannot trace a specific recipient or specific recipients of the money I lost.

Or we may have Case II: Suppose that, after receiving back my deposit, I spend additional time in French West Africa and am thus able to use inside the colony the whole of the deposit returned to me. Such was actually my case, because the government consented to return my deposit to me before my departure for French Guinea, which took place shortly. French Guinea is another part of French West Africa. I suffer no loss in purchasing power, because prices have not yet gone up appreciably. In French Guinea the francs returned to me will purchase about the same amount of goods that they would have purchased in October. And the government has not gained, for, as in Case I, they have returned to me the same purchasing power that they took from me. What I lost is the opportunity to obtain for my \$75, as a sort of gift from Providence, 375 francs' purchasing power over and above what I could have got for the same number of dollars in October.

In either of the two cases the government of French West Africa has gained and lost nothing. But if prices had gone up here, in sympathy with the external decline of the franc, before the government refunded my deposit to me, the government would have gained, through the fact that the money which they would return to me would represent less real goods and services than the money which they took from me. This would merely be one sort of manifestation of the process of indirect taxation by currency depreciation which certain

people in Germany felt rather keenly not so very long ago. In Case I, it would make no difference to me whether prices went up or remained the same. In Case II, I should lose in real purchasing power just what the government gained.

Of course this is merely an incident in the history of a currency depreciation extending over the years. Its particular interest is derived perhaps more than anything else from its connection with the lag in the rise of prices in a colony behind the drop in the external value of the currency of the mother country. Incidentally it is interesting to watch how the fall in the franc manifests itself in the prices of different commodities in the colonies. Apparently the commodity that rises fastest in price is steamship services — freight and passenger. Imported articles that are sold on the basis of their price in the country of production are next to go up — for instance, American automobiles and camera films. In other words, goods and services of a more or less international nature, the price of which is determined mainly by factors outside of France and the French colonies, in currencies other than French, are quite naturally the goods and services whose prices rise most rapidly after a fall in the value of the franc. Goods made in France and exported to the colonies rise much more slowly in price, particularly when they are made exclusively of raw materials obtainable in France. Last of all to respond with a rise to a fall in the franc are the prices of native products. In the coast cities prices tend, after considerable delay, to go up as the French goods go up; but it is always difficult to trace the process, because it is so indirect and so slow. And back in the "brousse," where you can buy chickens for a franc apiece, or where the headman of a village makes you a gift of chickens, eggs, and so forth, when you enter his village, it is practically impossible, even over years of depreciation, to trace the effect of changes in the quotation of the franc on the price level.

CONSTANT SOUTHWORTH.

DAKAR, SENEGAL.

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